National Institute for Health and Care Excellence

Draft for consultation

Behaviour change: digital and mobile health interventions

Evidence review for diet, physical activity and sedentary behaviour
Evidence review underpinning recommendations 1.1 to 1.4 and the research recommendations in the guideline

NICE guideline <number>

Evidence reviews

January 2020

Draft for Consultation

These evidence reviews were developed by Public Health Guidelines

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Contents

Review question

What components and characteristics of digital and mobile health interventions are effective at changing established behaviours relating to physical activity, sedentary behaviour and diet?

Introduction

This review will cover digital and mobile health interventions for the individual. It will address established unhealthy behaviours relating to a poor diet, lack of physical activity or sedentary behaviour. Addressing such behaviours can help to reduce the risk of developing chronic conditions, for example, diabetes and cardiovascular diseases as well as improving mental wellbeing. It can also help people to self-manage, self-monitor or improve physical or mental health conditions.

The review therefore aims to describe individual-level digital and mobile health interventions for changing unhealthy diets, poor physical activity levels or sedentary behaviour as well as identifying the critical components and intervention characteristics shown to be effective. Intervention components may include:

- Specific behaviour change techniques used
- Digital platform
- Intervention intensity and duration of provision (e.g. number of sessions or messages, total digital contact time or duration of active digital support).
- Recommendation or professional endorsement of an intervention

Other intervention characteristics may include:

- Particular groups of interest (see 'population')
- Extent of targeting to a group or tailoring/personalisation to an individual
- Sociodemographic factors of the target audience (such as age, gender, socioeconomic group, and ethnicity and digital literacy)
- Level of healthcare professional/practitioner induction or interaction
- Level of user engagement

PICO table

PICO Element	Details
Population	**Included:** Everyone, including children and young people under 16 (and their families or carers), who would benefit from changing an unhealthy diet/eating patterns, poor physical activity levels or sedentary behaviour. Specific consideration will

PICO Element	Details
	be given to people with the following chronic physical or long-term mental health conditions, who may benefit from managing diet, physical activity or sedentary behaviours because it affects their health or mental wellbeing: • Overweight/obesity • Hypertension and cardiovascular disease (including, stroke and coronary heart disease) • Musculoskeletal conditions (chronic back pain and osteoarthritis) • Diabetes • Cancers for which managing diet, physical activity or sedentary behaviour may improve health outcomes (for example colon cancer) • Mental health conditions (including anxiety, depression and dementia for which managing diet, physical activity or sedentary behaviour may improve outcomes) Specific consideration will also be given to people with learning disabilities and people with neurodevelopmental disorders such as autism. **Excluded**: Those (including children and young people under 16) who currently exhibit healthy behaviours in relation to diet, physical or sedentary behaviour. Those who have previously exhibited a lack of physical activity, poor eating habits or sedentary behaviour and no longer do so, and those who want to maintain healthy behaviours. Type and stage of cancers for which managing an established lifestyle behaviour may not improve health outcomes. Any condition listed above not associated causally with diet, physical activity or sedentary behaviour.
Intervention	**Included:** Digital and mobile health behaviour change interventions that focus on changing poor diet, a lack of physical activity or sedentary behaviour. That is interventions that are delivered via a digital or mobile platform as a direct interface with participants. Examples include: • Text message-based services (including picture messages and audio messages) • Those delivered by wearable devices • Those delivered by the internet (such as by apps, email, websites, videos, social networking sites and multi-media) • Digital gaming • Virtual or augmented reality • Interactive voice response interventions Digital or mobile health interventions are typically automated, interactive and personalised although they may involve some direct or ongoing interaction with a practitioner or health care professional. However it should be the digital or

PICO Element	Details
	mobile health technology itself that delivers the primary action, process of intervening or behaviour change techniques (as opposed to the healthcare practitioner or professional). The interventions may also focus on digital and mobile health strategies to improve mental wellbeing when managing diet, physical activity or sedentary behaviour (for example, managing stress, improving sleep and sleep hygiene, and reducing social isolation). **Excluded**: Interventions delivered solely by a healthcare professional or practitioner (for example counselling delivered over the telephone, video-links or by real-time live instant messaging), where the delivery of the primary action or process of intervening or behaviour change techniques is provided by the healthcare professional or practitioner Digital and mobile health interventions that aim to maintain healthy behaviours among those who do not currently exhibit unhealthy behaviours relating to diet, physical activity or sedentary behaviour. Clinical interventions to help with the diagnosis, treatment or management of a chronic physical or long-term mental health condition. Psychiatric interventions delivered as part of the therapeutic process for people with a mental health problem. Clinical or pharmacological methods of achieving behaviour change with no public health or health promotion element. For example, appointment reminders, medication reviews or self-care solely to improve medicine adherence. National policy, fiscal and legislative measures/ Changes to the public realm to support behaviour change (such as designing and managing public spaces in a way that encourages and helps people to be physically active).
Comparator	Other intervention for example a healthcare professional led intervention without a digital element or a combination of health professional and digital led interventions. Passive control group (usual care, no intervention) Trials with more than one comparator will be included if at least one of the experimental arms meets the technology-based intervention inclusion criteria (see above).
Outcomes	<u>Primary outcomes</u> Descriptive outcomes: Intervention components and study characteristics Change in (>6 months follow up from baseline) physical activity, sedentary behaviour or diet measured as: • Physical activity and sedentary behaviour (MET minutes or minutes/week, days/week, step counts, specified level of physical activity, sedentary time)

PICO Element	Details
	• Diet (daily fruit and vegetable intake or caloric intake, diet quality score, fast food and sugar sweetened beverage consumption, salt/sodium intake). Change in (>6 months follow up from baseline) health outcomes related to diet, physical activity and sedentary behaviour for example: • BMI • changes in weight or % weight loss Extent of engagement (measured as self-report or automatically recorded usage data): • program adherence/attrition, number of log-ins/visits, number of pages visited, number of sessions completed, time spent on the device, number of device components/features used). • Self-reported interaction with the digital or m-health behaviour change intervention through quantitative approaches (i.e. self-report questionnaires) <u>Secondary outcomes</u> These will be extracted only if the study also reports a primary outcome. • Health-related quality of life • Resources use and costs • Safety or adverse effects, including unintended consequences. Cost/resource use associated with the intervention The following outcomes will be extracted in reviews of the health economic evidence, where available: • cost per quality-adjusted life year • cost per unit of effect • net benefit • net present value • cost/resource impact or use associated with the intervention or its components **Excluded:** Any study which does not include a primary outcome.

Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in Appendix A. Information on the synthesis and quality assessment of included studies is discussed on page 26.

Declarations of interest were recorded according to NICE's 2018 conflicts of interest policy.

Public health evidence

17893 references were identified from literature searches outlined in Appendix D. 564 papers were ordered in full-text. In total 42 primary studies met the inclusion criteria outlined below. 522 studies were excluded. See Appendix D for Public health evidence study selection.

Included studies

Papers were included if they met the PICO and were:

- Randomised controlled trials
- Systematic reviews of randomised controlled trials, if the majority of included studies met the PICO. If the majority of studies did not meet the PICO, individual studies included in the systematic review were considered separately for inclusion in this evidence review.
- Conducted in any country.
- Published between 2000 and 2019.
- Published in English language.
- Had a follow up outcome measure from baseline of at least 6 months.

The health areas given specific consideration included: overweight/obesity, hypertension and cardiovascular disease (including stroke and coronary heart disease), musculoskeletal conditions, diabetes, cancers for which managing diet, physical activity or sedentary behaviour may improve outcomes (for example colon cancer), mental health conditions (including anxiety, depression and dementia for which managing diet, physical activity or sedentary behaviour may improve outcomes)

Specific consideration was also given to people with learning disabilities and people with neurodevelopmental disorders such as autism.

Excluded studies

See appendix J for full list of excluded studies with reasons for exclusion.

1 Summary of studies included in the evidence review

Study	Population	Intervention	Comparator	Outcome used (relevant to protocol)	Risk of bias
No chronic conditions (n=9)					
Alexander et al 2010 (USA)	Adults with no chronic conditions N=2513	Computer tailored programme	Other intervention: online untailored website (general F&V info)	Diet: self-report fruit & vegetable intake	Some concerns
Cameron et al 2015 (UK)	Adults with no chronic conditions N=2621	Computer tailored programme (personal activity monitor based intervention)	No intervention	Diet: self-report fruit and vegetable intake Physical activity: self-report MET minutes/week Engagement	High
Gell et al 2015 (USA)	Adults with no chronic conditions N=87	Text messages (motivational, informational and specific to performing physical activity)	No intervention	Physical activity: pedometer step counts	Some concerns
Gomez et al 2016 (Netherlands)	Adults with no chronic conditions N=373	Text messaging (eHealth intervention (emails); mHealth intervention (text messages))	No intervention	Physical activity: Self report IPAQ average daily physical activity - light moderate and vigorous	Some concerns

Hansen et al 2012 (Denmark)	Adults with no chronic conditions N=12287	Computer tailored programme (individually tailored feedback website on improving PA with a social interaction forum)	No intervention	Physical activity: self-report IPAQ min/week Engagement	Some concerns
Kolt et al 2016 (Australia)	Adults with no chronic conditions N=504	Computer tailored programme (Two web-based PA promotion interventions, 1 with additional social networking features)	Other intervention (paper-based logbook with same key information)	Physical activity: pedometer min/day of MVPV Engagement	Some concerns
Murray et al 2019 (UK)	Adults with no chronic conditions who may benefit from greater physical activity N=457	Computer-tailored programme (multicomponent intervention to increase physical activity. Wifi beacons were placed around the participants workplaces to encourage activity within 2km. Activity rewarded with redeemable loyalty points)	No intervention.	Physical activity: % of days walked for at least 10 mins; % weeks logged onto the website; % of earned points redeemed; total minutes recording daily activity. Engagement of each module of the website times/wk: monitoring and feedback, maps, rewards, health information, discussion forums, total sections, total	Some concerns

				minutes on website. Disengagement: days to non-usage attrition (activity); days to non-usage attrition (website); no. of participants with non-usage attrition (activity); no. of participants with non-usage attrition (website). Regression was conducted to assess if use of certain components of the website was associated with steps/day (detail in evidence table, Appendix E)	
Spittaels et al 2007 (Belgium)	Adults with no chronic conditions N=562	Computer tailored programme: Group 1 received computer tailored physical activity advice supplemented with five stage-of-change targeted reminder e-mails; Group 2 received the tailored physical activity advice without emails; and Group 3 received standard advice.	Other intervention (group 3 standard non-tailored PA advice delivered by a web page)	Physical activity: self-report IPAQ min/week, sitting time min/day	Some concerns
Overweight or obese (n=13)					

Allen et al 2013 (USA)	Adults overweight or obese N=68	Smartphone APP (aimed to increase physical activity and decrease calorific intake)	Intensive diet and exercise counselling; intensive diet and exercise counselling plus smartphone; less intensive diet and exercise counselling plus smartphone	Health outcomes: Changes in weight; % reduction in weight; BMI Physical activity: Self-report ≥moderate activity mean hrs/wk Diet: kcal/day, calories from fat, fruit and vegetable intake	Some concerns
Apiñaniz et al 2019 (Spain)	Adults overweight or obese N=110	Smartphone app (providing and reinforcing healthy diet and physical activity recommendations and advice and monitoring diet)	Other intervention: healthy diet and physical advice recommendations and advice given on paper	Health outcomes: weight change in kg; adherence to recommendations. Engagement	High
Carter et al 2013 (UK)	Adults overweight or obese N=128	Smartphone APP (self-monitoring weight management intervention)	Other interventions: a weight loss resources website and a paper food diary	Health outcomes: weight in kg. BMI, % body fat Engagement	High
Dassen et al 2018 (Germany)	Adults overweight or obese N=91	Computer-tailored intervention (serious game to improve cognitive ability)	No intervention	Health outcome: BMI (kg/m^2) Diet: healthy eating index	High

Dunn et al 2019 (USA)	Adults overweight or obese N=43	Smartphone app (photography-based diary)	Other intervention: calorie-based diary	Health outcome: weight change (kg) Engagement: no. times diet recorded; no. podcast downloaded total per group; correlation between number of days tracked and weight change.	Low
Greene et al 2012 (USA)	Adults overweight or obese N=513	Online social network with wireless monitoring devices (accelerometer and weight scale)	No intervention	Health outcomes: weight (lbs) Physical activity: self-report SQUASH survey min/week, leisure walking time min/week	Some concerns No info on SD
Haapala et al (2009) (Finland)	Adults, overweight or obese N=125	Computer tailored programme (mobile phone weight loss programme) (also uses text messaging)	No intervention	Health outcomes: weight (kg); % weight loss	Some concerns
Hutchesson et al (2018) (Australia)	Adults, overweight or obese N=57	Computer tailored programme (eHealth weight loss programme; also uses an app, email and texts and social media)	No intervention (Waiting list control)	Health outcomes: weight (kg), BMI Physical activity: self-report MVPA	Some concerns

				min/week, sitting time min/day Diet: fruit g/day, veg g/day	
Jane et al (2017) (Australia)	Adults, overweight or obese N=137	Social media, networking, chat forums (Facebook interaction group with access to a weight management programme)	Other intervention: Information pamphlet Control group: standard care	Health outcomes: weight (% loss), BMI	Some concerns
Laing et al (2014) (USA)	Adults, overweight or obese N=212	Smartphone APP (calorie counting and goal setting)	Control group: usual primary care	Health outcomes: weight (kg) Physical activity in past 7 days Healthy diet in past 7 days	High No info on SD
Marcus et al (2007) (USA)	Adults, overweight or obese N=249	Computer tailored programme (website with motivation material and goal setting functions)	Other interventions: tailored print arm, standard internet arm (no tailored feedback)	Physical activity: self-report Moderate to vigorous physical activity min/wk	Some concerns
Patrick et al (2011) (USA)	Adults, overweight or obese N=441	Computer tailored programme (web-based assessment and tailored web modules)	Wait list control (alternative web site general health information of interest to men but not likely to lead to changes in diet or physical activity behaviours)	Health outcomes: BMI, weight (kg) Diet: fruit and vegetable intake Physical activity: self-report IPAQ total walking	Some concerns

				min/day, IPAQ MVPA met min/wk	
Tanaka et al (2010) (Japan)	Adults, overweight or obese N=51	Computer tailored programme (computer tailored advice (KTP))	Other intervention: KTP booklet	Health outcomes: weight (kg), BMI, weight loss (%)	Some concerns
Hypertension/CVD (n=3)					
Dale et al (2015) (New Zealand)	Adults, hypertension or CVD (diagnosis of CHD) N=123	Text messaging (mHealth coronary rehabilitation programme Text4Heart, text message and supporting website)	Usual care: (centre-based cardiac rehabilitation (CP))	Health outcomes: BMI Physical activity: n (%) of participants physically active Diet: n (%) of participants ≥5 Fruit and vegetable intake	High
Santo et al 2018; Chow et al 2015 (Australia)	Adults with documented coronary heart disease N=710	Text-messaging (advice, motivational behaviours and support to change lifestyle behaviours, including exercise, diet and tobacco)	No intervention.	Health outcomes; BMI kg/m^2; waist and hip circumference cm. Physical activity: total physical activity MET min/wk; no. people inactive <600 MET min/wk; serves of fruits/wk; serves vegetables/wk; takeaway meals/wk; salt intake.	Low

Verheijden et al (2004) (Canada)	Adults, hypertension or CVD (at least 1 of hypertension, T2D, dyslipidaemia) N=146	Computer tailored programme (web-based nutrition counselling and social support)	Usual care	Health outcomes: BMI	High No info on SD
Diabetes (n=7)					
Agboola et al (2016) (USA)	Adults, diabetes (T2D) N=126	Text messaging (tailored to physical activity goals)	Usual care	Physical activity: pedometer total monthly step count Engagement	High
Block et al (2015/2016) (USA)	Adults, overweight or obese, clinical evidence of prediabetes, not diagnosed with diabetes N=340	Mixed web and text (Alive-PD, email and mobile phone reminders, supportive mobile phone app)	Waiting list control, access to intervention after 6mths	Health outcomes: weight (kg), BMI, achieved ≥5% weight loss Physical activity: aerobic activity days/wk Diet: fruit & vegetable intake	High
Glasgow et al (2012) (USA)	Adults, overweight or obese, T2D, ≥1 other risk factor for heart disease N=463	Computer tailored programme (computer-assisted self-management (CASM))	Control: enhanced usual care	Health outcomes: BMI Engagement	High
Polgreen et al (2018) (USA)	Adults, overweight or obese, T2D	Text messaging (automatic tailored text message	Other intervention: fitbit only	Daily steps, compliance, BMI	High

	N=138	reminders or reminders and goal setting)			
Jennings et al (2014) (Australia)	Adults, with type 2 diabetes	Computer tailored programme (fully automated to increase PA + pedometer)	No intervention/control: modified version of the website that had very restricted information. Subjects also given pedometer.	Physical activity: IPAQ self-report (min/week)	High
Cancer (n=4)					
Ferrante et al 2018 (USA)	Adult breast cancer survivors N=37	Computer-tailored programme (goal setting, dietary advice, PA tracking and social support website)	Other intervention: handouts for weight loss, PA goals, and calorie intake.	Health outcomes: weight (kg), BMI (kg/m^2), waist circumference, QoL Physical activity: fairly/very active mins/week, steps/day, calories/day. Days logged food/week, days logged in/week.	Some concerns
Golsteijn et al (2018) (The Netherlands)	Adults, prostate and colorectal cancer N=478	Computer tailored programme (automated computer-tailored physical advice (OncoActive))	Control: usual care waiting list	Physical activity: self-report SQUASH survey met mins/wk; pedometer MVPA	Some concerns

				Secondary outcomes: HRQoL	
Haggerty et al (2017) (USA)	Adults, endometrial cancer N=41	Text messaging (Text4diet)	Control: enhanced usual care	Health outcomes: Weight change (kg), % total weight loss Physical activity: self-report IPAQ met mins/wk	Some concerns
Kanera et al (2017) (The Netherlands)	Adults, various types of cancer, completed primary treatment N=87	Computer tailored programme (tailored feedback for physical activity, KNW self-management modules)	Waiting list control	Physical activity: self-report SQUASH mins/wk Diet: vegetable intake g per day	Some concerns
Musculoskeletal (n=1)					
Bossen et al (2013) (The Netherlands)	Adults, knee/hip osteoarthritis N=199	Computer tailored programme (web-based modules on physical activity)	Waiting list control	Physical activity: accelerometer min/day	High
Pregnancy (n=4)					
Kernot et al (2019) (Australia)	Women up to 12 months postpartum N=120	Computer-tailored programme/app (50-day walking challenge through a Facebook app and pedometer. Clusters were teams of friends)	Waiting list control: individuals received written advice through email on increasing physical activity	Physical activity (PA): moderate/vigorous PA min/week; self-reported walking min/week; self-reported moderate/vigorous PA min/week. Health outcomes: BMI kg/m^2; QoL.	Low

				Engagement: no. times visited app in 50 days; no. of days logged steps; no. virtual gifts sent to teammates; no. posts on the group message wall.	
Olson et al (2018) (USA)	Adults, pregnant N=1689	Computer tailored programme (in the form of a diet and PA activity goal-setting and self-monitoring tool. Women also received a weight gain tracker and health information including tips, articles frequently asked Q's, a description of pregnancy and parenting-related resources available in the local community; a blogging tool; and an event and appointment reminder)	Placebo control group: received everything apart from the computer tailored programme and the activity tracker (static info)	Health outcomes: % exceeding the upper limit of guidelines for total GWG, total GWG (kg) Engagement	Low
Smith et al (2016) (USA)	Adults, pregnant N=51	Computer tailored programme (website incorporated PA behavioural change aspects of goal setting, monitoring and social support)	Usual care: general prenatal diet and PA recommendations.	Health outcomes: total GWG (kg, % weight gain of total recommendations Physical activity: pedometer MET mins/wk, MVPA	Some concerns

				Diet: Kcal-day, % Kcals from carbs, protein, fat.	
Under 18 years (n=5)					
Chen et al (2011) (USA)	12-15yrs, normal weight or overweight N=54	Computer tailored programme (to promote healthy lifestyles and weights, to enhance self-efficacy, also family component for parents)	Control	Health outcomes: BMI Diet: fruit and vegetable intake	Some concerns
Chen et al (2017/2019) (USA)	13-18yrs, overweight or obese N=40	Smartphone APP (Fitbit flex wristband and iStart app; supported with text messages)	Control group (pedometer and blank food/activity diary, online programme consisting of 8 modules on general adolescent health issues)	Health outcomes: BMI Physical activity: self-report CHIS survey days/week; sedentary time hr/day; physical activity hr/wk; TV/computer time hr/day Diet: fruit and vegetable intake; consumption of sugar sweetened beverages; fast food consumption times/wk Secondary outcomes: PQoL physical health; PQoL	Some concerns

				psychosocial health	
Simons et al (2015) (The Netherlands)	12-17yrs, healthy weight N=270	Digital gaming (playstation move package with different game genres)	Waiting list control	Health outcomes: BMI Physical activity: self-report FPACQ total sedentary screen time hrs/wk; PA hrs/wk Diet: Consumption of sugar sweetened beverages Engagement	Some concerns
Slootmaker et al (2010) (The Netherlands)	13-17yrs, apparently healthy but inactive adolescents N=87	Computer tailored programme (accelerometer and web-based advice on physical activity)	Control group (single written information brochure with brief general PA recommendations)	Physical activity: self-report SQUASH survey	Some concerns

A summary of characteristics of the interventions can be found in Appendix F.

Synthesis and quality assessment of effectiveness evidence included in the review

Studies included in this review were all randomised controlled trials. Studies with a control group were assessed for risk of bias using the Cochrane's *Risk of Bias* 2.0 tool as referenced in Appendix H of the NICE methods manual. Meta-analysis was undertaken in Cochrane Review Manager (version 5.3). Subgroup analyses were used to determine the impact of population of interest (such as those with specific conditions) and the digital platform on the pooled result. Studies were grouped by digital platform according to the intervention types specified for inclusion in the review protocol. If a study used more than one digital platform (such as text messages along with an app) the study was grouped under the intervention which was most predominant and a note of this was made in the data extraction tables. GRADE methodology was used to appraise the evidence across five potential sources of uncertainty: risk of bias, indirectness, inconsistency, imprecision and other issues. Overall ratings start at 'High' where the evidence comes from RCTs, and 'Low' for evidence derived from observational studies. For further detail on methods including how the evidence for each outcome was appraised using GRADE **see the methods chapter (attached separately).**

With regards to imprecision, minimally important difference (MID) thresholds were used. For continuous outcomes, default MIDs were used (for continuous outcomes, the MID was 0.5*SD of control group at baseline - if used in a meta-analysis the control group of the study with the highest weight was used; for dichotomous outcomes, MIDs of 0.8 and 1.25 were used). If the confidence interval crosses one lower MID threshold, this indicates 'serious' risk of imprecision. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate. When neither of the confidence intervals crossed the MID and the point estimate is also beyond the MID a minimally important difference is present. Overall, the change in the outcome is not meaningful when the CIs cross the MID. If the MID could not be calculated (e.g. because standard deviation of outcome measure at baseline was not reported in the paper) then we downgraded by 1 level as it was 'not possible to calculate imprecision from the information reported in the study.

See Appendix G for full GRADE tables by outcome.

The quality of the evidence for the effectiveness outcomes ranged from moderate to very low, and the majority was very low in quality. This is because most of the included studies had either serious or very serious risk of bias. In addition, many of the effect estimates were imprecise because of small sample sizes and wide confidence intervals.

See appendix E for full evidence tables.

Economic evidence

Included studies

A unified search for economic evidence was conducted across all review questions in the guideline. A total of 5,267 records were assessed against the eligibility criteria. 5,107 records were excluded based on information in the title and abstract. The full-text versions of 160 papers were retrieved and assessed and 6 studies were assessed as meeting the inclusion criteria for this review question on smoking,

A re-run search was carried out in August 2019 to identify any additional economic evidence that was published during guideline development. 1,040 records were excluded based on information in the title and abstract. The full-text versions of 20 papers were retrieved and assessed and none were found to meet the inclusion criteria for this review question.

Excluded studies

174 full text documents were excluded for this question. The documents and the reasons for their exclusion are listed in appendix J. Documents were excluded for the following reasons: ineligible intervention (n=64), ineligible patient population (n=34), ineligible outcomes (n=28), limited ability to inform the committee about the factors of interest (n=15), ineligible study design (n=21) and systematic reviews (which were checked for potentially eligible studies) (n=12). The selection process is shown in appendix E.

Summary of studies included in the economic evidence review

Study	Intervention and comparator key features	Costs	Effects	Incremental cost effectiveness and uncertainty	Quality assessment
Archer 2012 (US) **Currency & cost year:** US$; 2010 **Cost-effectiveness analysis** **Population**: Sedentary, overweight and obese adult men and women	**INTERVENTION** Sense Wear armband (SWA) • Motion and temperature sensor armband, real-time wrist display, access to a Weight Management Solutions web account. • Participants encouraged to upload their SWA information and record their dietary intakes and weight to the Weight Management website on a daily basis over a period of 9 months. **COMPARATOR** Standard care: weight-loss manual	**Mean total cost per person** Standard care: $53.95 SWA: $182.57	**Kg lost per participant** Standard care: 0.90 SWA: 3.55	**Incremental analysis** SWA vs standard care (at 9 months): $48.54 per additional kg lost (£38.40 per additional kg lost) **Analysis of uncertainty** One way and two ways deterministic sensitivity analyses were conducted varying staff costs and efficacy over a 95% confidence interval (CI). The ICER did not vary substantially. For example, SWA had an ICER of $47.35 (95% CI $44.19 to $50.60) [£37.46 (95% CI £34.96 to £40.03)] and $49.72 (95% CI 46.39 to 53.12) [£39.33 (95% CI £36.70 to £42.02)] at 80% and 120% of staffing costs, respectively, when compared with standard care.	**Overall applicability:** Partially applicable **Overall quality:** Very serious limitations
Hersey 2012 (Netherlands) **Currency & cost year:** US$; 2007 **Cost-effectiveness analysis** **Population:** Overweight	**INTERVENTION** Weight loss manual plus interactive website (tailored computerised feedback) • The interactive version of eHealth provided tailored computerised feedback whenever participants submitted weekly assessments. The intervention lasted 12 months. **COMPARATOR**	**Total costs per person:** Standard care: $145 Interactive website: $160	**Weight loss (percentage) at 12 months:** Standard care: 4.1% Interactive website: 3.9%	**Incremental analysis** Incremental cost per 1% weight loss (kg) at 12 months: Intervention is dominated (less effective and more costly than comparator) **Analysis of uncertainty** Not undertaken	**Overall applicability:** Partially applicable **Overall quality:** Very serious limitations

Study	Intervention and comparator key features	Costs	Effects	Incremental cost effectiveness and uncertainty	Quality assessment
and obese adult men and women	Standard care: weight-loss manual plus basic website				
Krukowski, 2011 (US) **Currency & cost year:** US$; cost year not reported **Cost-effectiveness analysis** **Population**: Overweight and obese adults	**INTERVENTION** Internet intervention • Weekly group meetings in an online chat room for a duration for 6 months • Access to an online database to help monitor calorie intake • Educational resources • Bulletin board for group communication • Weekly tips and recipes • BMI calculator, • Local physical activity events **COMPARATOR** In-person weight loss intervention: • Session materials • Paper journal for self-monitoring dietary intake and physical activity • Commercially-available calorie and fat counting book	**Mean total cost per person:** Internet group: $372.56 In-person group: $706.45	**Weight loss at 6 months** Internet: 5.5±5.6kg In-person: 8.0±6.1kg **Change in BMI at 6 months** Internet: -1.98 (-2.28 to -1.68) In-person: -2.8 (-3.15 to -2.46) **Change in years of life lost to obesity** Internet: -0.47 (-0.60 to -0.34) In-person: -0.13 (-0.30 to 0.04)	**Incremental analysis** In-person vs internet group (lifetime): $7,177/LYG (£5,562/LYG) **Analysis of uncertainty** 95% CIs around ICERs were calculated. The incremental cost per LYG for the in-person vs internet group ranged from $3,055 (£2,367) to $60,291 (£46,720)	**Overall applicability:** Partially applicable **Overall quality:** Potentially serious limitations
Larsen, 2017 (US) **Currency & cost year:** US$; cost year not reported	**INTERVENTION** Internet-based physical activity intervention: • Monthly online surveys about physical activity, cognitive and behavioural strategies to change behaviour, self-efficacy, and other psycho-social constructs.	**Cost per participant** Internet-based physical activity intervention: $142 Website without physical activity: $76	**Increase in minutes of moderate to vigorous physical activity (MVPA) per participant at 12 months:** Internet-based physical activity intervention:	**Incremental analysis** Incremental cost per minute increase of moderate to vigorous physical activity MVPA at 12 months (internet-based physical activity vs website without physical activity) Based on participant recall: $0.04 (£0.03) Accelerometer: $0.08 (£0.06)	**Overall applicability:** Partially applicable **Overall quality:** Very serious limitations

Study	Intervention and comparator key features	Costs	Effects	Incremental cost effectiveness and uncertainty	Quality assessment
Cost-effectiveness analysis **Population:** Underactive women	• Encouraged daily logging of steps (using pedometer) on the website • Responses were used to generate individually tailored reports, with feedback on changes over time. • The intervention lasted 6 months **COMPARATOR** Website without physical activity: • Information on health topics other than physical activity		4033 (using 7-day recall); 1496 (using accelerometer) Website without physical activity: 2306 (using 7-day recall); 696 (using accelerometer)	**Analysis of uncertainty** Sensitivity analyses examined how changes in staffing costs and intervention effectiveness would influence cost-effectiveness. Based on accelerometer values, a 20% increase in staffing costs resulted in an ICER of $0.10 (£0.07) per minute increase in MVPA and a 20% decrease in staffing costs resulted in an ICER of $0.07 (£0.05) per minute increase in MVPA. A 20% increase in effectiveness resulted in an ICER of $0.07 (£0.05) per minute increase in MVPA and 20% decrease in effectiveness resulted in an ICER of $0.12 (£0.09) per minute increase in MVPA	
Leahey, 2014 (US) **Currency & cost year:** US$; 2010 **Cost-effectiveness analysis** **Population:** Adults aged 18 to 70 years with a BMI >25kg/m^2	**INTERVENTION** Internet behavioural weight loss intervention plus wellness campaign (SI): • Weekly 10 to 15 minute multimedia lessons based on the Diabetes Prevention Program for 12 weeks • Self-monitoring platform where participants tracked their daily weight, calorie, and activity information • ShapeUp Rhode Island (SURI) community initiative (online). Participants (in teams), entered the weight loss or physical activity division, or both, and competed with other teams	**Mean cost per participant (3 months) (95% CI)** S alone: $36.24 ($35, $38) SI: $138.03 ($131, $145)	**Mean weight change (3 months) (percentage) (95% CI)** S: -0.9% (-1.7,-0.2) SI: -4.0% (-4.9,-3) **Mean weight change (12 months) (percentage) (95% CI)** S: -0.9 % (-2.5,1) SI: -2.1% (-3.5,-0.8)	**Incremental analysis** Incremental cost per additional kg lost (3 months) SI vs S alone: $32 (£23) Incremental cost per additional kg lost (12 months) SI vs S alone: $85 (£62) **Analysis of uncertainty** Not conducted	**Overall applicability:** Partially applicable **Overall quality:** Very serious limitations

Study	Intervention and comparator key features	Costs	Effects	Incremental cost effectiveness and uncertainty	Quality assessment
	COMPARATOR ShapeUp Rhode Island alone (S)				
Padwal, 2017 (Canada) **Currency & cost year:** Can$; 2013 **Cost-consequences analysis** **Population:** Adult patients with BMI levels ≥35 kg/m^2 who were newly wait-listed for bariatric specialty care	**INTERVENTION** Web-based intervention: • Self-management and educational weight loss intervention • Educate patients regarding proper diet and exercise; improve weight management skills by enhancing self-management and self-efficacy • Help identify and overcome barriers to success • 13 modules were available on a single online platform and subjects were asked to read all 13 modules over a 3-month period **COMPARATOR:** Control group: printed educational materials for weight loss	**Mean total cost per person**: Web-based: Can$5.54 Control: Can$1.33	**Mean weight reduction (kg at 9 months)** Web-based: 2.8 ± 6.7 Control: 2.9 ± 8.8 **BMI change (at 9 months)** Web-based: -1.0 ± 2.4 Control: -1.0 ± 3.0 **EQ-5D score change (at 9 months)** Web-based: 0.02 ± 0.04 Control: 0.02 ± 0.05	**Incremental analysis** For all outcomes (weight loss, BMI, EQ-5D score) at 9 months: Web-based intervention dominated (less effective and more costly than control) **Analysis of uncertainty** Not undertaken	**Overall applicability:** Partially applicable **Overall quality:** Very serious limitations

1 Economic model

2 No original economic modelling was undertaken for this question.

3 Summary of the evidence

4 Effectiveness statements

5 All statements for pooled data are based on GRADE profile 1; all statements for non-pooled
6 data, interventions vs no intervention are based on GRADE profile 2; all statements for non-
7 pooled data, intervention vs other intervention is based on GRADE profile 3 (Appendix G).

Outcome	Summary	Confidence
Diet	Digital and mobile interventions increased the amount of fruit and veg consumed by adults (3 studies) and children (2 studies) after 6 months significantly more than no intervention and the difference was meaningful. Digital and mobile interventions did not increase the amount of fruit or veg in grams consumed by adults after 6 months (1 study). Digital and mobile interventions did not increase the number of portions of fruit or veg consumed by adults after 6 months (1 study). Digital and mobile interventions did not increase the number of adults consuming at least 5 fruit and veg a day after 6 months (1 study). Digital and mobile interventions increased the number of portions of fruit or veg a week consumed by adults after 6 months (1 study). Digital and mobile interventions did not increase the number of portions of veg a week consumed by adults after 6 months (1 study). Digital and mobile interventions decreased the amount of takeaway meals and salt intake per week by adults after 6 months (1 study). Digital and mobile interventions did not improve healthy diet in adults after 6 months (1 study). Digital and mobile interventions did not improve Healthy Eating Index in adults after 6 months (1 study). Digital and mobile interventions did not decrease consumption of sugar sweetened beverages in children after 6 months (1 study).	<u>Pooled data:</u> Adults: Very low Children: Low <u>Not pooled data:</u> Fruit or veg intake: Very low Fruit and veg portions: Very low At least 5 fruit or veg: Very low Portions of fruit or veg a week: High Portions of veg: Low Takeaways and salt: Moderate Healthy diet: Very low Healthy Eating Index: Very low Sweetened beverages: Low

	Digital and mobile interventions did not increase consumption fruit and veg in adults after 6 months (2 studies) more than another intervention. Digital and mobile interventions did not decrease number of calories consumed per day in adults after 6 months (1 study) more than another intervention.	Fruit and veg: Low Calories/day: Low
Physical activity	Digital and mobile interventions increased the amount of physical activity done by adults (8 studies) after 6 months significantly more than no intervention, but the difference was not meaningful. Digital and mobile interventions did not increase the number of steps done by adults (3 studies; measured differently) after 6 months significantly more than no intervention. Digital and mobile interventions did not increase the total amount of physical activity done adults (2 studies; given as mean and median) after 6 months significantly more than no intervention. Digital and mobile interventions did not increase the amount of physical activity done by adults in the previous week (1 study) after 6 months significantly more than no intervention. Digital and mobile interventions did not increase the number of adults who are physically active (1 study) after 6 months significantly more than no intervention. Digital and mobile interventions increased the amount of physical activity done by adults measured in MET (2 studies; reported in mean and median) after 6 months significantly more than no intervention. Digital and mobile interventions did not increase the total monthly step count in adults (1 study; reported	Pooled data: Physical activity: Low Not pooled data: Steps/day: Low Total physical activity: Low Physical activity previous week: Low Number of adults physically active: Very low Physical activity, MET: High/Very low Monthly step count in risk ratio: Very low Accelerometer: Very low

	as risk ratio) after 6 months significantly more than no intervention. Digital and mobile interventions did not increase the number of days adults walked more than 30 minutes daily (1 study) after 6 months significantly more than no intervention. Digital and mobile interventions did not increase the total physical activity in adults measured by accelerometer (1 study) after 6 months more than no intervention.	
	Digital and mobile interventions did not increase MVPA/day in adults (1 study) after 6 months significantly more than another intervention. Digital and mobile interventions did not increase total physical activity/day in adults (1 study) after 6 months significantly more than another intervention. Digital and mobile interventions did not increase moderate physical activity/day in adults (1 study) after 6 months significantly more than another intervention. Digital and mobile interventions did not increase moderate to vigorous physical activity/day in adults (1 study) after 6 months significantly more than another intervention. Digital and mobile interventions did not increase steps/day in adults (2 studies) after 6 months significantly more than another intervention. Digital and mobile interventions did not increase walking min/week in pregnant adults (1 study) after 6 months significantly more than another intervention. Digital and mobile interventions did not increase MVPA in pregnant adults (1 study) after 6 months significantly more than another intervention.	MVPA/day: Moderate Total physical activity: Low Moderate physical activity: Very low Moderate to vigorous physical activity: Very low Steps/day: Very low Walking in pregnant adults: High MVPA in pregnant adults: High

BMI	There was no difference between interventions and no interventions concerning BMI change in adults (11 studies) and children (2 studies) after 6 months.	Adults: Very low Children: Very low
	There was no difference between interventions and other interventions concerning BMI change in adults (2 studies) after 6 months.	Very low
Weight change	There was no difference between interventions and no interventions concerning weight change in adults (7 studies) after 6 months. Digital and mobile interventions decreased weight measured in lbs in adults (1 study) after 6 months significantly more than no intervention. Digital and mobile interventions increased %weight loss in adults (1 study) after 6 months significantly more than no intervention. There was no difference between interventions and no interventions concerning mean weight change in adults (1 study) after 6 months. Digital and mobile interventions increased the number of adults who lost 5% or more in weight (1 study) after 6 months significantly more than no intervention.	Pooled data: Weight change (kg): Very low <u>Not pooled data:</u> Weight change (lbs): Very low Weight change (%): Very low Mean weight change (kg): Very low Number of adults 5% weight loss: Very low
	There was no difference between interventions and other interventions concerning weight change (kg) in adults (2 studies) after 6 months. There was no difference between interventions and other interventions concerning weight change (%) in adults (1 study) after 6 months.	Weight change (kg): Very low Weight change (%): Very low
Gestational weight gain	Digital and mobile interventions did not decrease weight in pregnant adults (2 studies) after 6 months significantly more than no intervention.	Very low
Sedentary time	There was no difference between interventions and no interventions concerning total sitting time in adults (1 study) after 6 months. Digital and mobile interventions decreased inactivity in adults (1 study) after 6 months significantly more than no intervention.	Sitting time: Very low Inactivity: High

	There was no difference between interventions and another intervention concerning total weekday or weekend sitting time in adults (1 study) after 6 months.	Sitting time: Very low

Economic evidence statements

One within-trial cost-effectiveness analysis (Archer, 2012) found that a multisensor armband linked to a web account was more effective and more costly than standard care ($48.54 per additional kg lost [£38.40 per additional kg lost]). The analysis was assessed as partially applicable to the review question with very serious limitations

One within-trial cost-effectiveness analysis (Hersey, 2012) found that an interactive website that provided tailored feedback was less effective in terms of weight loss and more costly than a basic website in overweight and obese individuals. The authors noted that the differences in weight loss and costs between arms were small and no analysis of uncertainty was undertaken. The analysis was assessed as partially applicable to the review question with very serious limitations.

One within-trial cost-effectiveness analysis (Krukowski, 2011) found that in-person group sessions were more effective and more costly than an internet-based group chat room for weight loss ($7,177 per life year gained [£5,562/LYG]) but the ICER was subject to considerable uncertainty ($3,055 to $60,921 per life year gained [£2,367 to £46,720 per life year gained]).The analysis was assessed as partially applicable to the review question with potentially serious limitations.

One within-trial cost-effectiveness analysis (Larsen, 2017) found that an internet-based intervention may be more effective but more costly compared to a website without a physical activity emphasis, for underactive women ($0.08 [£0.06] per minute increase of moderate to vigorous physical activity). The analysis was assessed as partially applicable to the review question with very serious limitations.

One within-trial cost-effectiveness analysis (Leahey, 2014) found that the addition of an internet behavioural programme to a state-wide wellness campaign was more effective and more costly than the state-wide wellness campaign alone at 12 months ($85 [£62] per additional kg lost). The analysis was assessed as partially applicable to the review question with very serious limitations.

One within-trial cost-consequences analysis (Padwal, 2017) found that a web-based self-management weight loss intervention was more costly and no more effective than the provision of printed educational weight loss materials for very obese patients in Canada who were newly waitlisted for bariatric specialty care. The analysis was assessed as partially applicable to the review question with very serious limitations.

Recommendations

Please refer to the separate guideline document for recommendations.

Research recommendations

Please refer to the separate guideline document for the research recommendations.

Rationale and impact

Please refer to the separate guideline document for the rationale and impact.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

Several primary outcomes of interest were included within the protocol for this review, including behavioural outcomes (such as diet, physical activity and sedentary behaviour), health outcomes (such as BMI and weight changes) and the level of user engagement with digital and mobile health interventions. The committee discussed these outcomes and agreed that these were all important to answer the review question and thus would be given the same priority during data extraction and analysis. Fifteen effectiveness studies addressed outcomes relating to diet, twelve of these studies included interventions compared to a control and three studies compared another intervention. Twenty-seven effectiveness studies addressed outcomes relating to physical activity, twenty of these studies included interventions that were compared to a control group and seven included interventions that were compared to another intervention. Thirty-three effectiveness studies addressed health outcomes, twenty-eight of these studies included interventions compared to a control group and five of these studies included interventions that were compared to another intervention. Two studies addressed outcomes relating to sedentary behaviour, one of these included an intervention compared to a control group and the other study compared another intervention. Fourteen studies addressed engagement outcomes, though these were not consistently reported.

The committee acknowledged that some studies within the review reported multiple outcomes across these behaviours of interest (for example diet and physical activity outcomes). All the relevant outcomes from these studies that met the inclusion criteria in the review protocol were included, to allow for data extraction and analysis. Some studies may have also included interventions that focused on changing multiple behaviours that may have not been relevant to the current review question (such as smoking cessation). It was agreed that if outcomes were reported separately then these studies may be included in multiple evidence reviews across the guideline, with the relevant outcomes extracted according to the protocol.

The committee noted that studies included within the review addressed several health areas which were given specific consideration. These included: overweight/obesity, hypertension and cardiovascular disease, musculoskeletal conditions, diabetes and cancers for which managing diet, physical activity or sedentary behaviour may improve outcomes. The committee noted that there were no studies which targeted people with mental health conditions (including anxiety, depression and dementia for which managing diet, physical activity or sedentary behaviour may improve outcomes) and thus decided to make a research recommendation to assess the effectiveness of digital and mobile health interventions in underserved groups, people with mental health conditions and people in low socioeconomic groups.

The committee were keen to highlight any harms and mitigate any unintended consequences that diet and physical activity interventions may pose. The committee recognised that digital interventions that targeted any behaviour could have a potential to do harm but realised that this was a specific concern when eating habits and exercise are targets. When self-tracking food and physical activity habits, feelings of guilt and obsession can arise in people at risk of disordered eating and excessive exercise. There may be two aspects of this, firstly from people not reaching their goals disengaging with no long-lasting behaviour change exhibited. Conversely people who compulsively check their progress are at risk of obsession, eating

disorders and excessive exercise. Furthermore, using interventions with a self-monitoring component my risk relapse in those with a previous history of these behaviours.

The committee discussed evidence from topic experts that showed disengagement is not always associated with poorer outcomes. Some activity monitoring shows that users are cyclic, and many will stop using the monitor all together when physical activity becomes a habit and do not need it as prompt anymore.

The quality of the evidence

The quality of the effectiveness evidence ranged from high to very low, with the evidence for most outcomes being very low. The committee considered that this enabled them to only make a recommendation on one component of mobile and digital health interventions that was found to be effective for behaviour change in diet and physical activity.

The main factors that reduced the quality of the evidence were risk of bias (mainly due to a lack of blinding and subjective outcomes), inconsistency (due to unexplained heterogeneity of effect estimates between studies pooled in the same meta-analysis), imprecision within effect estimates and outcomes reported (due to wide confidence intervals that crossed the default MID thresholds) and low sample sizes.

The committee agreed that the evidence on effectiveness of digital and mobile health interventions included within the review varied substantially, with some studies finding the intended changes across behavioural and health outcomes and other studies finding no effects. The committee acknowledged that where possible, pooled analyses of randomised controlled trial (RCT) data were conducted to combine results from different studies and identify patterns among behavioral and health outcomes. Data were pooled from behavioral outcomes on diet (fruit and vegetable intake in adults and those under 18 years), physical activity (minutes/week BMI) and health outcomes (BMI in adults and those under 18 years, weight change, and gestational weight gain in pregnancy).

The committee noted that low and very low-quality pooled data from these meta-analyses indicated that the use of digital and mobile health interventions improved the number of servings of fruit and vegetables per day compared to a control in adults and those under 18 years, along with physical activity in adults compared to a control. Data also revealed that the use of digital and mobile health interventions reduced BMI in adults and those under 18 compared to a control, along with absolute weight loss in adults. No effects were found on preventing excess gestational weight gain in pregnancy using digital and mobile health interventions compared with control. The committee agreed that despite these positive effects on behavioural and health outcomes the evidence was largely inconclusive as not all changes were found to be statistically significant or clinically important and thus agreed against making strong recommendations on digital and mobile health interventions for diet and physical activity behaviour.

Sub-group analysis of this data was performed to determine the impact of specific components and characteristics of interventions found to be effective. However only suitable data on ‘population of interest’ and ‘Digital platform’ was found to allow for sub-group analysis within pooled results. The committee were asked to consider detail on other components and characteristics of interest individually across studies as reporting of these varied substantially which did not allow for further sub-group analysis. Components of interventions from each study were compared to try to deduce if any components found across studies are associated with better diet and physical activity outcomes (Appendix K). The committee questioned the relevance and importance of the data from sub-group and component analyses to determine the impact of population, and Digital platform on the effectiveness of digital and mobile health interventions. It was agreed that evidence from these sub-group and components analyses were too limited to provide robust data to support strong recommendations on these components or characteristics and thus decided to recommend more research in this area.

The committee agreed that high to very low-quality individual study data indicated that digital and mobile health interventions showed some changes in behaviour compared to a control across a range of outcomes including diet, physical activity, sedentary behaviour and health outcomes.

The committee acknowledged that there was variability across the studies in terms of intervention components and characteristics of interest and thus agreed that combined analysis of this data was not feasible. The committee noted the complex nature of many of the interventions, in that they contained multiple approaches with the aim of changing behaviour. The complexity of the interventions in terms of the characteristics and components such as the intensity and the number of elements (e.g. goal setting, planning, use of pedometers, dietary and/or exercise logs, feedback via several mechanisms) meant that for both those interventions that showed effectiveness and those that didn't it was not clear which aspects may have contributed to these findings.

The committee had some concerns with recommending specific behaviour change techniques that may have been utilised in interventions found to be effective. They agreed that many of the interventions that showed benefits adopted the following behaviour change techniques: feedback and monitoring, goals and planning and social support. The committee discussed that based on their expertise that the reporting of behaviour change techniques varies substantially in research within this area and many studies do not consistently report all behaviour change techniques used. For example, they may include and report on widely used techniques such as goal-setting and social support, but they may also include and not report on novel and alternative techniques such as 'nudging', 'just in time' 'behavioural prompts' social media messages and education games.

They noted that the costs of developing and maintaining effective digital interventions may be substantial, and so interventions are most likely to be cost-effective if delivered at scale to a large population (e.g. national and regional) along with being locally applicable. The committee further agreed that if no suitable digital interventions are available, it is important to ensure that new interventions are developed following best practice guidance (for example MRC guidance for developing complex interventions, PHE guidance for developing digital interventions and their digital assessment questionnaire, DoH guidance for technologies, and NICE evidence standards framework for digital health interventions). This includes drawing on appropriate theory and evidence-based behaviour change techniques, planning and refining interventions by working intensively with all stakeholders (including a wide range of members of the target population and providers of the intervention) and evaluating their effectiveness.

Benefits and harms

The committee agreed that overall the evidence indicated that the effectiveness of digital and mobile health intervention varies widely. Consequently, determining the factors associated with their effectiveness is difficult when there is substantial heterogeneity across individual components and characteristics of interventions. The committee noted that recommending digital and mobile health interventions that may be ineffective could cause harm, but evidence on this had not been identified, and thus highlighted the importance of recommending the selection and development of interventions that are based on high quality, effective evidence and best practice guidance.

The committee agreed that many of the interventions (including those that showed benefits in terms of behavioural and health outcomes) reported using some level of individual tailoring (for example automated tailored feedback for an individual based on current physical activity levels or dietary goals). Despite concerns with the quality and conclusiveness of the evidence, based on their expertise the committee agreed that this general intervention approach is important as it may maximise intervention impact and effect. They agreed based

on their expert opinion that this should be considered particularly during the co-production and development of such interventions.

The committee acknowledged that an important part of delivering a customer focused approach is addressing the great challenge of health inequality within the general public by ensuring that access to digital and mobile health interventions is equal among all socio-demographic populations. However, they agreed that there is a paucity of research on how best to target and tailor interventions to reach underserved populations and thus made a research recommendation to address this.

As many of these technologies are freely available, it will not only be available to people that are referred these to interventions but to people at risk of, or recovering, from eating disorders or body image concerns. The committee were aware that commercial interventions will encourage continuous use even when people have met their goals and wanted to stop interventions from setting underweight target goals. Expert testimony described research that had shown that 75% of people with an eating disorder use apps to log eating behaviour and 73% believe it contributes to their disordered eating.

In addition, experts noted that interventions can feature unregulated adverts promoting unhealthy behaviours such as weight loss when people are already at a healthy weight or more exercise when people are active enough. Experts said that adverts and social media focus on goals that are external to the person, such as appearance and what others think of them. However, internal motivation, such as personal satisfaction, is associated with higher behaviour change success. Therefore, self-monitoring, adverts and social media can lead people to develop obsessive and compulsive behaviours. Therefore, the committee made a recommendation against advising interventions with self-monitoring components to people at risk.

Experts observed that conversely, other people may be put off by constant notifications reminding them that they are not meeting their goals. This can negatively affect their self-efficacy causing them to abandon the intervention. The committee decided to make recommendations that the intervention's primary objective should be the person's health and not profit, interventions should not allow a goal to be underweight, and interventions developed for the NHS should adhere to regulations regarding data harvesting and push notifications.

They suggested that the recommendation could exclude all children from using self-monitoring. However, they decided that as there was limited data on harms in children, self-monitoring may benefit a large number of children and recommending against it may do more harm than good.

The committee acknowledged that unintended consequences may arise through good intentions when people use the interventions. The committee considered expert testimony that showed people may shun more vigorous activity in favour of moderate activity only because their trackers do not distinguish between physical activity intensity. Experts also said some people's eating habits may not change or become more unhealthy as a result of using tracking interventions. When tracking food consumption, people may eat more processed food and ready meals because it is easier to enter the nutritional values that are already counted on ready meal packaging into the programme than freshly prepared food. The committee acknowledged that processed food typically contains more fat and salt that lead to worse health outcomes.

The committee addressed the possible issue that people may use digital interventions exclusively instead of face-to-face consultation to self-manage clinical conditions and disorders that could be alleviated by healthy diet and physical activity. The committee appreciated that they could be used a part of a wider strategy in managing a condition, but this should not allow digital interventions to be the sole method of delivery if the person requires more support. The committee were concerned that publication of this guideline may

lead to other services being terminated and replaced with digital and mobile interventions that may not be as effective as the service the person currently uses. They recognised the importance of current services for enabling behaviour change in diet and physical activity. Therefore, the committee were keen to recommend that existing, effective services should not be decommissioned to make this point clear.

Cost effectiveness and resource use

The review of published cost-effectiveness evidence identified 6 studies for inclusion. In all studies, the digital intervention involved an internet-based component. In one study (Archer 2012), the intervention was described as a multi-sensor armband device that provided real-time display and access to a web-based account. Two other studies (Larson 2017, Leahey 2014) mentioned the use of a pedometer as part of the intervention arm for measuring step count information that could be entered on a website.

The committee noted that the published cost-effectiveness evidence had a number of serious limitations. Firstly, none of the studies were conducted in the UK (5 in the US and 1 in Canada). Secondly, the trials ranged from 6 months to 1 year in duration and reported short-term outcomes such as weight loss or moderate to vigorous physical activity but most of the studies did not attempt to capture the longer-term costs or health consequences of the intervention such as the impact on obesity, mortality or quality of life. In 2 studies (Hersey 2012, Padwal 2017), the digital intervention was both less effective (in terms of weight loss) and more costly than the comparator so the absence of longer-term modelling is unlikely to change the conclusions. However, for 3 of the other studies, there were potential trade-offs involved because the digital intervention was both more effective and more costly than the comparator and in 1 study (Krukowski 2011), the digital intervention was found to be both less effective and less costly compared to in-person group sessions. Modelling long-term outcomes would require making an assumption about how long the weight loss would be sustained. Based on estimates in the economic modelling literature for obesity, it was possible to estimate the amount it would be worth paying per kg of weight loss that would translate to a threshold value of £20,000 per QALY. For example, if a person of average height who is slightly overweight loses 1 kg but gains it back after 12 months, it would be worth paying approximately £100; if the person loses 1 kg but gains it back after 5 years, it would be worth paying approximately £245 (Lewis 2014). Based on these approximations, the digital interventions in Archer 2012 and Leahey 2014 would be considered cost effective.

Overall, due to the differences in interventions and outcomes across studies, the committee felt it was not possible to draw any generalisable conclusions about what specific characteristics and components of digital interventions are cost effective for changing established behaviours relating to physical activity or sedentary behaviour. The committee also questioned the applicability of the cost-effectiveness analyses from the US to the UK context. In particular, 2 of the studies (Krukowski 2011, Leahey 2014) took into account costs to participants (time or travel costs), which are not normally considered in the reference case for economic evaluations in NICE guidelines. However, the committee noted more generally that participant costs (such as time, exercise equipment, gym membership) could potentially be a barrier to uptake of interventions aimed at increasing physical activity.

Overall discussion of the evidence across all review questions

Please refer to the separate guideline document (evidence review 1 – smoking behaviour) for the committee discussion of the evidence across all review questions.

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Appendices

Appendix A – Review protocols

Review protocol for diet physical activity and sedentary behaviour

Field (based on PRISMA-P	Content
Review question	What components and characteristics of digital and mobile health interventions are effective at changing established behaviours relating to physical activity, sedentary behaviour and diet?
Type of review question	Effectiveness
Objective of the review	This review aims to describe individual-level digital and mobile health interventions for changing unhealthy diets, poor physical activity levels or sedentary behaviour and identify the critical components and intervention characteristics shown to be effective. Intervention components may include: • Specific behaviour change techniques used • Digital platform • Intervention intensity and duration of provision (e.g. number of sessions or messages, total digital contact time or duration of active digital support). • Recommendation or professional endorsement of an intervention Other intervention characteristics may include: • Particular groups of interest (see 'population')

	• Extent of targeting to a group or tailoring/personalisation to an individual • Sociodemographic factors of the target audience (such as age, gender, socioeconomic group, and ethnicity and digital literacy) • Level of healthcare professional/practitioner induction or interaction • Level of user engagement
Eligibility criteria – population/disease/condition/issue/domain	**Included**: Everyone, including children and young people under 16 (and their families or carers), who would benefit from changing an unhealthy diet/eating patterns, poor physical activity levels or sedentary behaviour. Specific consideration will be given to people with the following chronic physical or long-term mental health conditions, who may benefit from managing diet, physical activity or sedentary behaviours because it affects their health or mental wellbeing: • Overweight/obesity • Hypertension and cardiovascular disease (including, stroke and coronary heart disease) • Musculoskeletal conditions (chronic back pain and osteoarthritis) • Diabetes • Cancers for which managing diet, physical activity or sedentary behaviour may improve health outcomes (for example colon cancer) • Mental health conditions (including anxiety, depression and dementia for which managing diet, physical activity or sedentary behaviour may improve outcomes)

	Specific consideration will also be given to people with learning disabilities and people with neurodevelopmental disorders such as autism. **Excluded**: Those (including children and young people under 16) who currently exhibit healthy behaviours in relation to diet, physical or sedentary behaviour. Those who have previously exhibited a lack of physical activity, poor eating habits or sedentary behaviour and no longer do so, and those who want to maintain healthy behaviours. Type and stage of cancers for which managing an established lifestyle behaviour may not improve health outcomes. Any condition listed above not associated causally with diet, physical activity or sedentary behaviour.
Eligibility criteria – intervention(s)/exposure(s)/prognostic factor(s)	Digital and mobile health behaviour change interventions that focus on changing poor diet, a lack of physical activity or sedentary behaviour. That is interventions that are delivered via a digital or mobile platform as a direct interface with participants. Examples include: • Text message based services (including picture messages and audio messages) • Those delivered by wearable devices • Those delivered by the internet (such as by apps, email, websites, videos, social networking sites and multi-media) • Digital gaming • Virtual or augmented reality • Interactive voice response interventions Digital or mobile health interventions are typically automated, interactive and personalised although they may involve some direct or ongoing interaction with a practitioner or health care professional. However it should be the digital or

	mobile health technology itself that delivers the primary action, process of intervening or behaviour change techniques (as opposed to the healthcare practitioner or professional). The interventions may also focus on digital and mobile health strategies to improve mental wellbeing when managing diet, physical activity or sedentary behaviour (for example, managing stress, improving sleep and sleep hygiene, and reducing social isolation). Studies must primarily focus on changing behaviours in regard to diet, physical activity or sedentary behaviour. If other behaviours are targeted within the technology results on these must be reported separately in order for extraction and analysis to be carried out. If the intervention focuses on changing multiple behaviours then results on diet, physical activity or sedentary behaviour must be reported separately for extraction and analysis to be carried out. If the intervention reports on separate behaviours it may be included in multiple reviews with the relevant outcomes extracted according to the protocol, and could be further considered in a multi-behaviour meta-regression if data requirements are met for such an approach. **Excluded**: Interventions delivered solely by a healthcare professional or practitioner (for example counselling delivered over the telephone, video-links or by real-time live instant messaging), where the delivery of the primary action or process of intervening or behaviour change techniques is provided by the healthcare professional or practitioner Digital and mobile health interventions that aim to maintain healthy behaviours among those who do not currently exhibit unhealthy behaviours relating to diet, physical activity or sedentary behaviour. Clinical interventions to help with the diagnosis, treatment or management of a chronic physical or long-term mental health condition.

	Psychiatric interventions delivered as part of the therapeutic process for people with a mental health problem. Clinical or pharmacological methods of achieving behaviour change with no public health or health promotion element. For example, appointment reminders, medication reviews or self-care solely to improve medicine adherence. National policy, fiscal and legislative measures/ Changes to the public realm to support behaviour change (such as designing and managing public spaces in a way that encourages and helps people to be physically active). **Settings:** Any setting where people may be referred to, self-refer to, or access digital or mobile health behaviour change interventions, including online or other digital access platforms. All countries to be included.
Eligibility criteria – comparator(s)/control or reference (gold) standard	**Included**: Other intervention for example a healthcare professional led intervention without a digital element or a combination of health professional and digital led interventions. Passive control group (usual care, no intervention)

	If longitudinal cohort and 'before-and-after' intervention studies need to be included (see 'study design'), then before and after (time) will be a comparator. Trials with more than one comparator will be included if at least one of the experimental arms meets the technology-based intervention inclusion criteria (see above).
Outcomes and prioritisation	<u>Primary outcomes</u> Descriptive outcomes: Intervention components and study characteristics Short term and long term change in physical activity, sedentary behaviour or diet measured as: • Physical activity and sedentary behaviour (MET minutes or minutes/week, days/week, step counts, specified level of physical activity, sedentary time) • Diet (daily fruit and vegetable intake or caloric intake, diet quality score, fast food and sugar sweetened beverage consumption, salt/sodium intake). Short term and long term health outcomes related to diet, physical activity and sedentary behaviour for example: • BMI • changes in weight or % weight loss Extent of engagement (measured as self-report or automatically recorded usage data): • program adherence/attrition, number of log-ins/visits, number of pages visited, number of sessions completed, time spent on the device, number of device components/features used). • Self-reported interaction with the digital or m-health behaviour change intervention through quantitative approaches (i.e. self-report questionnaires)

	Secondary outcomes These will be extracted only if the study also reports a primary outcome. • Health-related quality of life • Resources use and costs • Safety or adverse effects, including unintended consequences. **Cost/resource use associated with the intervention** The following outcomes will be extracted in reviews of the health economic evidence, where available: • cost per quality-adjusted life year • cost per unit of effect • net benefit • net present value • cost/resource impact or use associated with the intervention or its components **Excluded**: Any study which does not include a primary outcome.

Eligibility criteria – study design	**Included study designs**:
	
	Effectiveness studies:
	
	• Systematic reviews of effectiveness studies
	• Studies of effectiveness including:
	  – RCTs (including cluster RCTs)
	  – non-randomised controlled trials such as before and after studies
	  – interrupted time series

	Economic studies: • Cost-utility (cost per QALY) • Cost benefit (i.e. net benefit) • Cost-effectiveness (Cost per unit of effect) • Cost minimization • Cost-consequence **Excluded study designs**: • Cross-sectional studies
Other inclusion exclusion criteria	Systematic reviews (SRs) identified from database searches may be included as a primary source of data. Quality of identified SRs will be assessed against the inclusion criteria for this protocol. Where partially or fully applicable, the quality of the SR will be assessed using the ROBIS tool. Where the SR is: - Fully applicable and moderate or high quality: details or data from systematic review will be used. - Partially applicable and moderate or high quality: details or data from systematic review will be used. Any sections of the protocol not covered by the SR will be covered by usual searches. In addition to any SRs meeting the above criteria, other primary studies will be included if they were published after the publication date of the SR and meet the protocol inclusion criteria. Where SRs identified from database searches do not meet the above criteria, the included studies will be sifted to identify any primary studies not already identified by the searches that meet the inclusion criteria for this review.

	Full economic analyses and costing studies identified from searches will be included. Costing data will not be used for the purpose of the effectiveness review. Health economics reviews and modelling will be conducted by the York Health Economics Consortium (YHEC) Only papers published in the English language will be included. Only studies published since the year 2000 will be included. Only full published studies (not protocols or summaries) will be included.
Proposed sensitivity/sub-group analysis, or meta-regression	Where sufficient data are available, subgroup analysis or meta-regression will be used to identify the critical components or characteristics of interventions shown to be effective. Intervention components may include: • Specific behaviour change techniques used • Digital platform • Intervention intensity and duration of provision (e.g. number of sessions or messages, total digital contact time or duration of active digital support). • Recommendation or professional endorsement of an intervention Other intervention characteristics may include: • Particular groups of interest (see 'population') • Extent of targeting to a group or tailoring/personalisation to an individual • Sociodemographic factors of the target audience (such as age, gender, socioeconomic group, and ethnicity and digital literacy)

	• Level of healthcare professional/practitioner induction or interaction • Level of user engagement
Selection process – duplicate screening/selection/ analysis	The review will use the priority screening function within the EPPI-reviewer systematic reviewing software. Double screening will be carried out for 10% of titles and abstracts by a second reviewer. Disagreements will be resolved by discussion. Inter-rater reliability will be assessed and reported. If below 90%, a second round of 10% double screening will be undertaken. The study inclusion and exclusion lists will be checked with members of the PHAC to ensure no studies are excluded inappropriately.
Data management (software)	EPPI Reviewer will be used: • to store lists of citations • to sift studies based on title and abstract • to record decisions about full text papers • to order freely available papers via retrieval function • to request papers via NICE guideline Information Services • to store extracted data Cochrane Review Manager 5 / Eppi Reviewer (TBC) will be used to perform meta-analyses. R will be used for meta-regression.
Information sources – databases and dates	The purpose of the search is to identify the best available evidence to address the questions without producing an unmanageable volume of results. The following methods will be used to identify the evidence: • the databases listed below will be searched with an appropriate strategy.

	• the websites listed below will be searched or browsed with an appropriate strategy. **Database strategies** The database strategy will be adapted as appropriate from the one used in PH49 in 2013, taking into account the resources available to this review, the subscriptions that NICE has, changes in indexing policies and the final scope for the current evidence reviews. The principal search strategy is listed in Appendix A. The search strategy will take this broad approach: Behaviour change AND unhealthy behaviours (as detailed in the scope) AND digital OR mobile health interventions AND 2000-Current AND Limits Each unhealthy behaviour (lack of physical activity, unhealthy eating patterns or sedentary behaviour, smoking, hazardous or binge drinking and unsafe sexual behaviour) will be searched separately according to the individual Review Protocols. Feedback on the principal database strategy was sought from PHAC members. The principal search strategy will be developed in MEDLINE (Ovid interface) and then adapted, as appropriate, for use in the other sources listed, taking into account their size, search functionality and subject coverage. The other databases will be: • Cochrane Central Register of Controlled Trials (CENTRAL) via Wiley • Cochrane Database of Systematic Reviews (CDSR) via Wiley • DARE (records up to March 2014 only) (CRD • Embase via Ovid • Health Management Information Consortium (HMIC) via Ovid

	• MEDLINE via Ovid • MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid • PsycINFO via Ovid • Social Policy and Practice (SPP) via Ovid **Database search limits** Database functionality will be used, where available, to exclude: • non-English language papers • animal studies • editorials, letters and commentaries • conference abstracts and posters • registry entries for ongoing or unpublished clinical trials • duplicates. Sources will be searched from 2000 to current. The database search strategies will not use any search filters for specific study types. **Cost effectiveness evidence** A separate search will be done for cost effectiveness evidence. The following databases will be searched again with agreed study-type search filters applied to a strategy based on the one in Appendix A: • Embase via Ovid • MEDLINE via Ovid • MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid

	In addition, the following sources will be searched without study filters: • EconLit via Ovid • HTA database via CRD https://www.crd.york.ac.uk/CRDWeb/ • NHS EED via CRD https://www.crd.york.ac.uk/CRDWeb **Website searching** The following websites will be searched with an appropriate strategy and the first 50 results examined to identify any UK reports or publications relevant to the review that have not already been identified: • Google (restricting to uk domains) www.google.co.uk • Google Scholar www.scholar.google.com • NICE Evidence Search https://www.evidence.nhs.uk Searches will also be conducted on the following key websites for relevant UK reports or publications: • Public Health England (www.gov.uk/government/organisations/public-health-england) • Public Health Wales (www.wales.nhs.uk) • Scottish Public Health Observatory (www.scotpho.org.uk) • Department of Health (www.gov.uk/government/organisations/department-of-health) • Public Health Agency (Northern Ireland) (www.publichealth.hscni.nt) • Public Health Institute (www.cph.org.uk)

	• Royal Society for Public Health (https://www.rsph.org.uk/) • Centre for Behaviour Change UCL (https://www.ucl.ac.uk/behaviour-change) • The Kings Fund (https://www.kingsfund.org.uk/) • The Behavioural Insights Team (https://www.behaviouralinsights.co.uk/) • Nesta (https://www.nesta.org.uk/) • dblb computer science bibliography (https://dblp.uni-trier.de/) • ACM Digital library (https://dl.acm.org/) The website results will be reviewed on screen and documents in English that are potentially relevant to review questions will be listed with their title and abstract (if available) in a Word document. **Quality assurance** The guidance Information Services team at NICE will quality assure the principal search strategy and peer review the strategies for the other databases. Any revisions or additional steps will be agreed by the review team before being implemented. Any deviations and a rationale for them will be recorded alongside the search strategies. **Search results** The database search results will be downloaded to EndNote before duplicates are removed using automated and manual processes. The de-duplicated file will be exported in RIS format for loading into EPPI-Reviewer for data screening.
Identify if an update	[If anupdate to an existing review, include question and date of original search. If helpful, add recommendations that might change as a result of this update.]

Author contacts	Please see the guideline development page
Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual
Search strategy – for one database	For details please see appendix D of the full guideline
Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix E (effectiveness evidence tables) or H (economic evidence tables) of the full guideline.
Data items – define all variables to be collected	For details please see evidence tables in appendix E (effectiveness evidence tables) or H (economic evidence tables) of the full guideline.
Methods for assessing bias at outcome/study level	Standard study checklists were used to critically appraise individual studies. For details please see Appendix H of Developing NICE guidelines: the manual Where appropriate, the risk of bias across all available evidence was evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ When applying GRADE, where RCTs are considered the best available evidence for the question and outcome in question, they will start as high quality evidence. Where RCTs are not the most appropriate study design for a particular question or outcome, GRADE will be modified to allow for the study design considered most appropriate to start as high quality. Any adaptations of GRADE will be explained fully including a rationale to support the adaptation.

Criteria for quantitative synthesis (where suitable)	Studies will be grouped according to the type of intervention as appropriate. For details please see section 6.4 of Developing NICE guidelines: the manual
Methods for analysis – combining studies and exploring (in)consistency	For full details please see the methods chapter of the full guideline. Meta-analysis will be firstly used to determine the effect of digital and mobile health interventions within the specified behaviour area by synthesising all available data, regardless of study components or characteristics. This will provide an overall estimate of the effect of the interventions on behaviour. In order to carry out a meta-analysis, there will need to be similar studies meeting the inclusion criteria. Data from different studies will be meta-analysed if the studies are similar enough in terms of population, interventions, comparators and outcomes. Where meta-analysis is appropriate, a random effects model will be used to allow for the anticipated heterogeneity. This assumption will be tested with a fixed effects model. Unexplained heterogeneity will be examined where appropriate with sensitivity analysis. If the studies are found to be too heterogeneous to be pooled statistically, a narrative synthesis will be conducted. Methods for pooling cluster and individual randomised controlled trials will be considered where appropriate. If data are suitable for meta-analysis, subgroup meta-analyses will be used to answer the sub-questions identified above. If meta-analysis is deemed possible, sub group analysis or meta-regression may (if appropriate) be used to assess whether between-study variation in intervention effectiveness can be attributed to the presence of various study components or characteristics. Regression coefficients and their test of significance will be reported
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual.

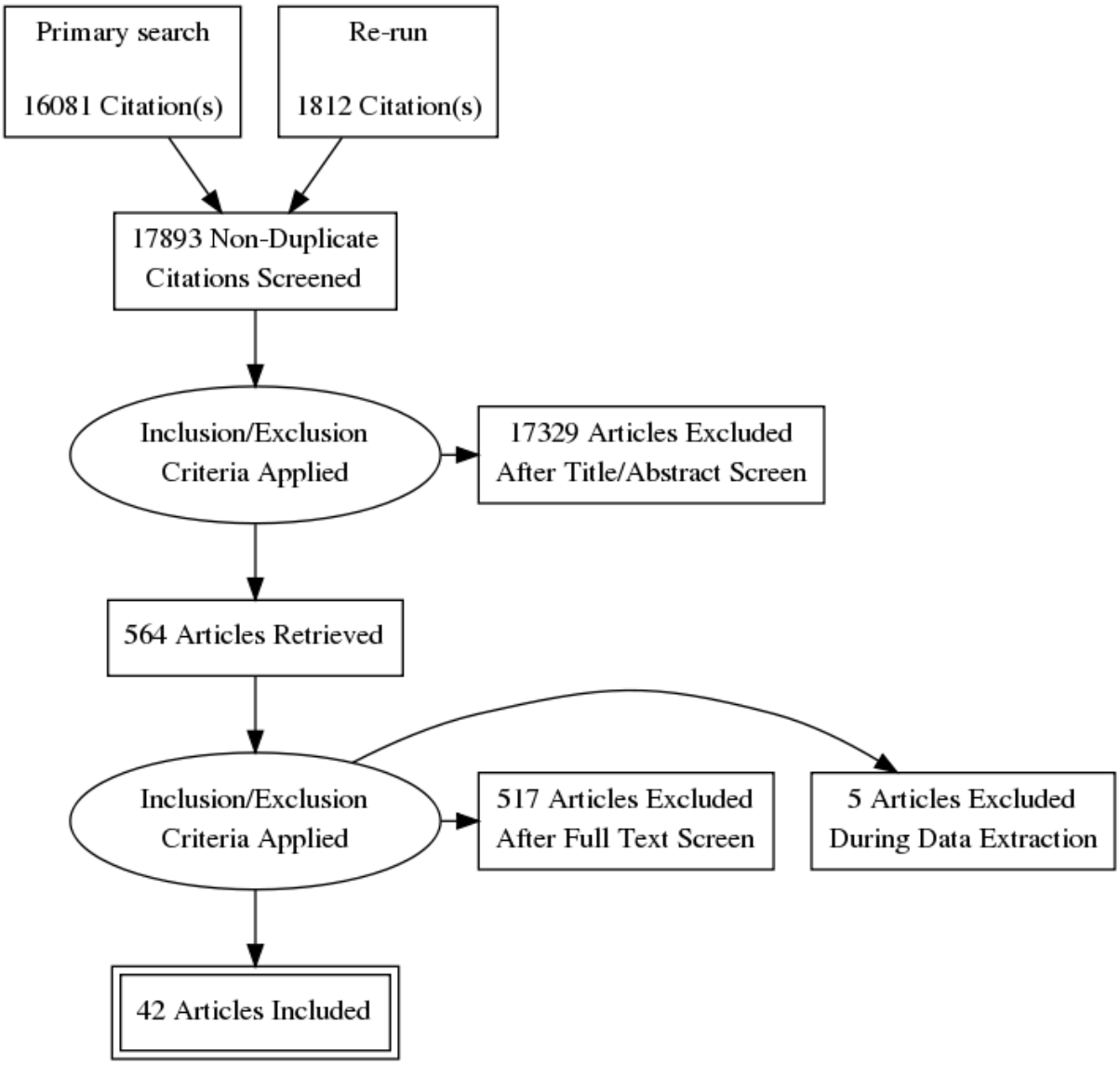
Assessment of confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual
Rationale/context – Current management	For details please see the introduction to the evidence review in the full guideline.
Describe contributions of authors and guarantor	A multidisciplinary committee will develop the guideline. The committee will be convened by Public Health Internal Guidelines Development (PH-IGD) team and chaired by [add name of Chair] in line with section 3 of Developing NICE guidelines: the manual. Staff from Public Health Internal Guidelines Development team will undertake systematic literature searches, appraise the evidence, conduct meta-analysis where appropriate and draft the guideline in collaboration with the committee. Cost-effectiveness analysis will be conducted by YHEC where appropriate. For details please see Developing NICE guidelines: the manual.
Sources of funding/support	PH-IGD is funded and hosted by NICE. YHEC are contracted/funded by NICE to deliver cost effectiveness reviews and economic modelling for public health guidelines.
Name of sponsor	PH-IGD is funded and hosted by NICE
Roles of sponsor	NICE funds PH-IGD to develop guidelines for those working in the NHS, public health and social care in England
PROSPERO registration number	[If registered, add PROSPERO registration number]

1

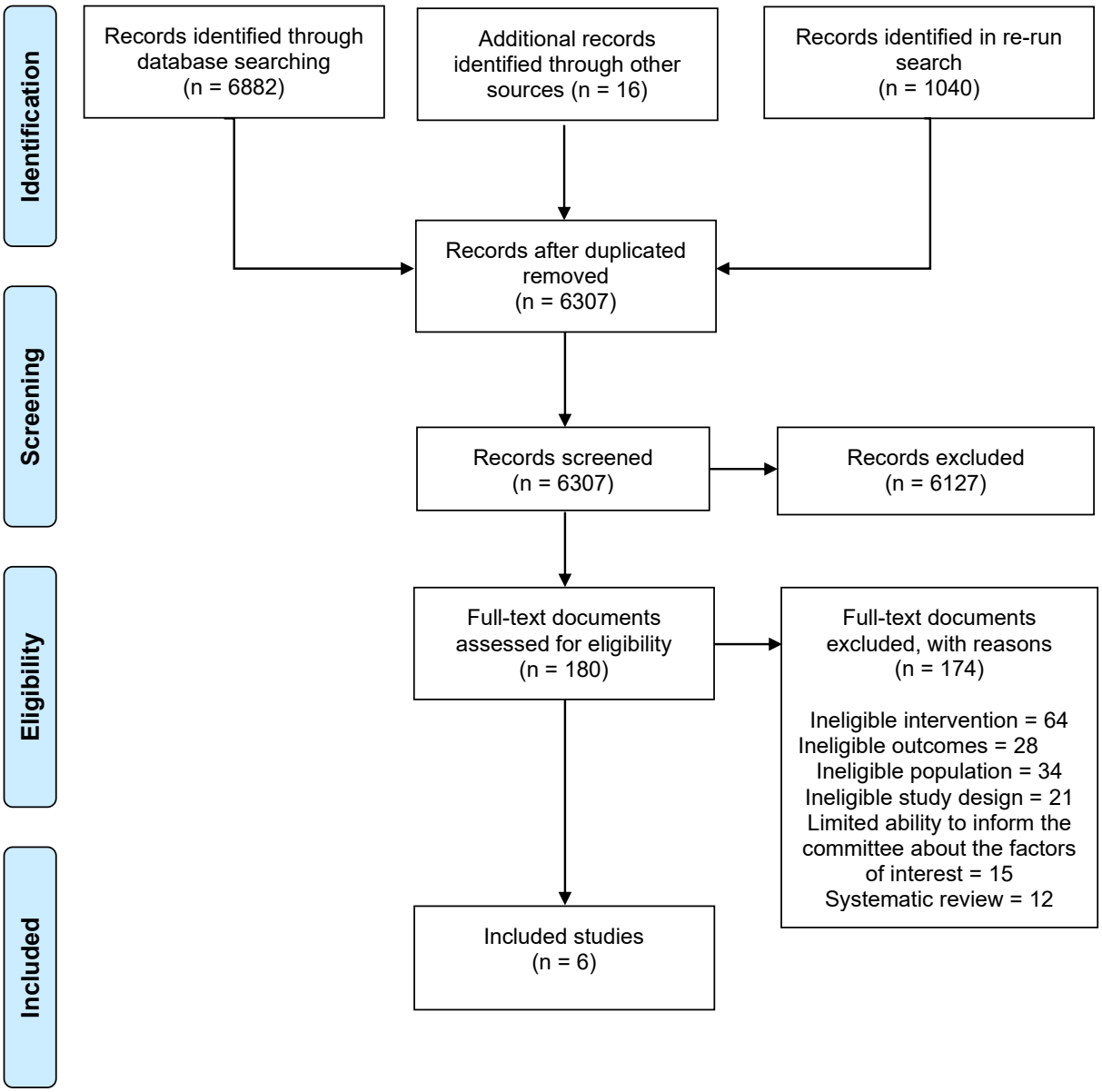
Appendix B – Research recommendations

See evidence review 1 (smoking) for all research recommendations and PICO tables.

Appendix C – Public health evidence study selection



Appendix E – Economic evidence study selection



Appendix D – Literature search strategies

Economic evidence

Note: a unified search for economic evidence was conducted for all review questions in this guideline

Database name: MEDLINE

1 Health Behavior/ (45965)
2 Health Knowledge, Attitudes, Practice/ (100524)
3 Risk Reduction Behavior/ (11188)
4 Behavior Therapy/ (26562)
5 PSYCHOTHERAPY/ (52164)
6 Cognitive Therapy/ (22511)
7 MOTIVATION/ (61890)
8 Patient Education as Topic/ (81150)
9 Patient acceptance of healthcare/ (41100)
10 Health promotion/ (68389)
11 "Outcome and Process Assessment (Health Care)"/ (25495)
12 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (31617)
13 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab,kw. (88489)
14 motivat*.ti. (14483)
15 or/1-14 (535137)
16 exp EXERCISE/ (174008)
17 exp EXERCISE MOVEMENT TECHNIQUES/ (7290)
18 exp SPORTS/ (168645)
19 exp exercise therapy/ (44950)
20 ((physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*) adj3 (fit* or activ* or train*)).ti. (60086)
21 SEDENTARY LIFESTYLE/ (7220)
22 exercis*.ti. (97711)
23 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (8381)
24 FOOD HABITS/ (76202)
25 FOOD PREFERENCES/ (13168)
26 Nutrition therapy/ (1923)
27 *DIET/ (71783)

28 Body Mass Index/ (114816)
29 Healthy diet/ (2044)
30 diet*.ti. (155010)
31 ((health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (129962)
32 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (12879)
33 or/16-32 (767389)
34 SMOKING/ (134671)
35 SMOKING CESSATION/ (26370)
36 "TOBACCO USE CESSATION"/ or exp "TOBACCO USE"/ or "TOBACCO USE DISORDER"/ (13229)
37 SMOKERS/ (587)
38 Electronic Nicotine Delivery Systems/ or Vaping/ (2213)
39 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (2057)
40 "TOBACCO USE CESSATION PRODUCTS"/ (1512)
41 exp Pipe smoking/ (75)
42 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (1453)
43 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (204950)
44 (tobacco* or nicotin* or cigar* or cigs).tw. (181144)
45 or/34-44 (344859)
46 exp ALCOHOL-RELATED DISORDERS/ (108758)
47 exp ALCOHOL DRINKING/ (64438)
48 exp Alcoholic Beverages/ (18633)
49 Drinking Behavior/ (6548)
50 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (102554)
51 or/46-50 (213234)
52 exp Sexual Behavior/ (99473)
53 Sexual Health/ (397)
54 Sex education/ (8530)
55 exp Sexually Transmitted Diseases/ (323661)
56 HIV/ (18005)
57 Blood-Borne Pathogens/ (2917)
58 Pregnancy, Unplanned/ (1647)
59 Birth control/ (18923)
60 Pregnancy in Adolescence/ (7591)
61 Pregnancy Unwanted/ (2539)
62 Contraceptive Agents/ (4490)
63 Condoms/ (9681)

64 Contraceptive behavior/ (7488)
65 Condoms, Female/ (426)
66 (contracep* or condom*).tw. (73799)
67 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (71922)
68 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*).tw. (285872)
69 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (14081)
70 (birth adj control*).tw. (4473)
71 (famil* adj3 plan*).tw. (24787)
72 or/52-71 (592222)
73 or/33,45,51,72 (1805988)
74 TELEMEDICINE/ (18725)
75 Therapy, Computer-Assisted/ (6424)
76 User-Computer Interface/ (35219)
77 Software Design/ (5745)
78 MULTIMEDIA/ (1809)
79 Computers, Handheld/ (3301)
80 Videotape Recording/ (11137)
81 Internet/ (67068)
82 Social Networking/ (2350)
83 Online Social Networking/ (16)
84 Blogging/ (897)
85 Social Media/ (5412)
86 Electronic Mail/ (2493)
87 Cell Phones/ (7642)
88 Text Messaging/ (2119)
89 Smartphone/ (2534)
90 Mobile Applications/ (3700)
91 WEARABLE ELECTRONIC DEVICES/ (754)
92 Video Games/ (4558)
93 Virtual Reality/ (636)
94 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (41380)
95 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (10768)
96 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (4993)
97 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (2388)
98 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (7450)

99 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (9457)
100 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (6537)
101 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (8487)
102 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (279509)
103 (e-mail* or email* or electronic mail*).tw. (11476)
104 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (10318)
105 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*).tw. (33899)
106 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (41146)
107 ((virtual or augmented) adj3 reality).tw. (6719)
108 Speech Recognition Software/ (648)
109 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw,kw. (705)
110 IVR.tw. (944)
111 or/74-110 (492045)
112 and/15,73,111 (12571)
113 Economics/ or exp "Costs and Cost Analysis"/ or Economics, Dental/ or exp Economics, Hospital/ or exp Economics, Medical/ or Economics, Nursing/ or Economics, Pharmaceutical/ or Budgets/ or exp Models, Economic/ or Markov Chains/ or Monte Carlo Method/ or Decision Trees/ (325711)
114 (Economic* or cost or costs or costly or costing or costed or price or prices or pricing or pharmacoeconomic* or pharmaco economic* or budget*).ti,ab. (591398)
115 ((monte adj carlo) or markov or (decision adj2 (tree* or analys*))).ti,ab. (49362)
116 (value adj2 (money or monetary)).ti,ab. (1766)
117 Quality of Life/ or Health Status Indicators/ or Quality-Adjusted Life Years/ or Value of Life/ (201539)
118 (quality of life or quality adjusted life or qaly* or qald* or qale* or qtime* or quality of wellbeing or quality of well-being or willingness to pay or standard gamble* or time trade off* or time tradeoff*).ti,ab. (205307)
119 (disability adjusted life or daly).ti,ab. (2537)
120 health* year* equivalent*.ti,ab. (38)
121 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).ti,ab. (20533)
122 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).ti,ab. (1222)

123 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).ti,ab. (4252)
124 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).ti,ab. (27)
125 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).ti,ab. (364)
126 (euroqol or euro qol or eq5d or eq 5d).ti,ab. (7253)
127 or/113-126 (1022455)
128 (((energy or oxygen) adj cost*) or (metabolic adj cost*) or ((energy or oxygen) adj expenditure*)).ti,ab. (25248)
129 127 not 128 (1015741)
130 112 and 129 (1997)
131 limit 130 to yr="2000 -Current" (1930)
132 limit 131 to english language (1877)
133 Animals/ not Humans/ (4506319)
134 132 not 133 (1867)
135 limit 134 to (clinical conference or comment or editorial or historical article or letter or news) (6)
136 134 not 135 (1861)

Database name: MIP/Epubs

1 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (5835)
2 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab. (17570)
3 motivat*.ti. (2478)
4 or/1-3 (22736)
5 ((physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*) adj3 (fit* or activ* or train*)).ti. (10100)
6 exercis*.ti. (12653)
7 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (2011)
8 diet*.ti. (18984)
9 ((health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (21928)
10 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (2112)
11 or/5-10 (60183)
12 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (1052)

13 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (483)
14 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (25197)
15 (tobacco* or nicotin* or cigar* or cigs).tw. (21826)
16 or/12-15 (39043)
17 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (12511)
18 (contracep* or condom*).tw. (5959)
19 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (10438)
20 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*).tw. (31223)
21 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (1632)
22 (birth adj control*).tw. (388)
23 (famil* adj3 plan*).tw. (2532)
24 or/18-23 (45570)
25 or/11,16-17,24 (148454)
26 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (16498)
27 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (1976)
28 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (2199)
29 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (480)
30 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (2400)
31 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (5555)
32 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (5858)
33 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (7401)
34 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (69069)
35 (e-mail* or email* or electronic mail*).tw. (3056)
36 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (2488)

37 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or fitbit*).tw. (10560)
38 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (12606)
39 ((virtual or augmented) adj3 reality).tw. (2107)
40 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw. (98)
41 IVR.tw. (320)
42 or/26-41 (116943)
43 and/4,25,42 (1103)
44 25 and 42 (10238)
45 limit 44 to yr="2017 -Current" (6808)
46 43 or 45 (7192)
47 (Economic* or cost or costs or costly or costing or costed or price or prices or pricing or pharmacoeconomic* or pharmaco economic* or budget*).ti,ab. (126735)
48 ((monte adj carlo) or markov or (decision adj2 (tree* or analys*))).ti,ab. (21570)
49 (value adj2 (money or monetary)).ti,ab. (338)
50 (quality of life or quality adjusted life or qaly* or qald* or qale* or qtime* or quality of wellbeing or quality of well-being or willingness to pay or standard gamble* or time trade off* or time tradeoff*).ti,ab. (39946)
51 (disability adjusted life or daly).ti,ab. (571)
52 health* year* equivalent*.ti,ab. (2)
53 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).ti,ab. (2807)
54 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).ti,ab. (716)
55 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).ti,ab. (795)
56 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).ti,ab. (5)
57 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).ti,ab. (22)
58 (euroqol or euro qol or eq5d or eq 5d).ti,ab. (1768)
59 or/47-58 (182507)
60 (((energy or oxygen) adj cost*) or (metabolic adj cost*) or ((energy or oxygen) adj expenditure*)).ti,ab. (3669)
61 59 not 60 (181259)
62 46 and 61 (959)
63 limit 62 to yr="2000 -Current" (959)
64 limit 63 to english language (953)
65 limit 64 to (clinical conference or comment or editorial or historical article or letter or news) (0)

66 64 not 65 (953)

Database name: Embase

1 behavior change/ (30212)
2 health 70nglish7070/ (60586)
3 attitude to health/ or risk reduction/ (195169)
4 behavior therapy/ (40905)
5 psychotherapy/ (81847)
6 cognitive therapy/ (42796)
7 motivation/ (92282)
8 patient education/ (106609)
9 patient attitude/ (62747)
10 health promotion/ (90169)
11 Outcome assessment/ (459747)
12 ((behavio?r* or lifestyle* or “life style*”) and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (44885)
13 ((behavio?r* or lifestyle* or “life style*”) adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab,kw. (144310)
14 motivat*.ti. (18165)
15 or/1-14 (1224078)
16 exp exercise/ (303603)
17 exp kinesiotherapy/ (69470)
18 exp sport/ (145038)
19 ((physical* or keep* or cardio* or aerobic or fitness or 70nglish70* or more or become or becoming or be or 70nglish7070*) adj3 (fit* or 70nglis* or train*)).ti. (83120)
20 sedentary lifestyle/ or sitting/ (30759)
21 physical activity/ (135422)
22 exercis*.ti. (132758)
23 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (13654)
24 feeding 70nglish7070/ or Food intake/ or Portion size/ (179314)
25 food preference/ (12426)
26 diet therapy/ (48807)
27 *diet/ (65042)
28 unhealthy diet/ or healthy diet/ (2365)
29 body mass/ (366272)
30 diet*.ti. (191322)
31 ((health* or unhealthy or poor* or chang* or 70nglis* or 70nglis* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (200415)

32 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (19034)
33 or/16-32 (1387258)
34 smoking/ (277521)
35 smoking cessation/ (53791)
36 smoking habit/ (21151)
37 cigarette smoking/ or cigar smoking/ (51706)
38 exp “tobacco use”/ or tobacco dependence/ (366278)
39 smoking cessation program/ or smoking reduction/ (3105)
40 “smoking and smoking related phenomena”/ (180)
41 electronic cigarette/ or vaping/ or pipe smoking/ (4551)
42 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (3494)
43 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (2308)
44 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (332911)
45 (tobacco* or nicotin* or cigar* or cigs).tw. (236781)
46 or/34-45 (559889)
47 drinking 71nglish7171/ (45140)
48 alcohol consumption/ (114518)
49 exp alcohol abuse/ (34844)
50 alcohol intoxication/ (11483)
51 alcohol abstinence/ (6164)
52 exp alcoholic beverage/ or alcohol/ (256320)
53 drunkenness/ (3118)
54 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (155984)
55 or/47-54 (426009)
56 exp sexual 71nglish7171/ (193908)
57 sexual health/ (13872)
58 sexual education/ (10789)
59 exp sexually transmitted disease/ (82663)
60 Human immunodeficiency virus/ (107533)
61 bloodborne bacterium/ (1919)
62 unplanned pregnancy/ (4958)
63 birth control/ (3680)
64 adolescent pregnancy/ (9109)
65 unwanted pregnancy/ (3097)
66 contraceptive agent/ (17643)
67 condom/ (19065)
68 contraceptive 71nglish7171/ (3665)
69 female condom/ (331)

70 (72nglish7272t* or condom*).tw. (92337)
71 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (108297)
72 (STD* or STI or “sexually transmitted disease*” or “sexually transmitted infection*” or HIV*).tw. (403110)
73 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (19148)
74 (birth adj control*).tw. (4414)
75 (famil* adj3 plan*).tw. (25694)
76 or/56-75 (763969)
77 or/33,46,55,76 (2864133)
78 telemedicine/ (20032)
79 computer assisted therapy/ (4478)
80 computer interface/ (29361)
81 digital computer/ (2380)
82 software design/ (586)
83 multimedia/ (3553)
84 personal digital assistant/ (1301)
85 videorecording/ (73411)
86 Internet/ (101111)
87 social network/ (13368)
88 blogging/ (257)
89 social media/ (13901)
90 e-mail/ (17996)
91 mobile phone/ (14846)
92 text messaging/ (3838)
93 smartphone/ (7244)
94 mobile application/ (7400)
95 electronic device/ (1838)
96 video game/ (2420)
97 virtual reality/ (14185)
98 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (83470)
99 (telemed* or tele-med* or telehealth* or tele-health* or 72nglish72* or tele-car*).tw. (16924)
100 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (8205)
101 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (3795)
102 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (12384)

103 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (21092)
104 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (12736)
105 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (15189)
106 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (464892)
107 (e-mail* or email* or electronic mail*).tw. (28650)
108 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (17696)
109 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*).tw. (61766)
110 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (64114)
111 ((virtual or augmented) adj3 reality).tw. (11530)
112 automatic speech recognition/ (941)
113 interactive voice response system/ (577)
114 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw,kw. (1138)
115 IVR.tw. (1818)
116 or/78-115 (860579)
117 and/15,77,116 (23998)
118 health-economics/ or exp economic-evaluation/ or exp health-care-cost/ or pharmacoeconomics/ or Monte Carlo Method/ or Decision Tree/ (541174)
119 (Economic* or cost or costs or costly or costing or costed or price or prices or pricing or pharmacoeconomic* or pharmaco economic* or budget*).ti,ab. (928134)
120 ((monte adj carlo) or markov or (decision adj2 (tree* or analys*))).ti,ab. (77974)
121 (value adj2 (money or monetary)).ti,ab. (2925)
122 Quality of Life/ or Quality Adjusted Life Year/ or Quality of Life Index/ or Short Form 36/ or Health Status/ (535533)
123 (quality of life or quality adjusted life or qaly* or qald* or qale* or qtime* or quality of wellbeing or quality of well-being or willingness to pay or standard gamble* or time trade off* or time tradeoff*).ti,ab. (385660)
124 (disability adjusted life or daly).ti,ab. (3883)
125 Health* year* equivalent*.ti,ab. (40)
126 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six or sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six or sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve or sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen or sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or

sftwenty or shortform twenty or short form twenty or euroqol or euro qol or eq5d or eq 5d).ti,ab. (61852)
127 or/118-126 (1743470)
128 (((energy or oxygen) adj cost*) or (metabolic adj cost*) or ((energy or oxygen) adj expenditure*)).ti,ab. (35250)
129 127 not 128 (1734611)
130 117 and 129 (4845)
131 limit 130 to yr=”2000 -Current” (4793)
132 limit 131 to 74nglish language (4708)
133 exp animal/ or exp animal-experiment/ or nonhuman/ (25358585)
134 (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,sh. (5378979)
135 exp human/ or human-experiment/ (19263219)
136 133 or 134 (25494592)
137 136 not (136 and 135) (6232240)
138 (comment or editorial or letter or news).pt. (1648938)
139 137 or 138 (7818751)
140 132 not 139 (4617)
141 limit 140 to (conference abstract or conference paper or “conference review”) (1044)
142 140 not 141 (3573)

Database name: HTA/NHS EED

1 MeSH DESCRIPTOR Health Behavior
2 MeSH DESCRIPTOR Health Knowledge, Attitudes, Practice
3 MeSH DESCRIPTOR Risk Reduction Behavior
4 MeSH DESCRIPTOR Behavior Therapy
5 MeSH DESCRIPTOR PSYCHOTHERAPY
6 MeSH DESCRIPTOR Cognitive Therapy
7 MeSH DESCRIPTOR MOTIVATION
8 MeSH DESCRIPTOR Patient Education as Topic
9 MeSH DESCRIPTOR Patient Acceptance of Health Care
10 MeSH DESCRIPTOR Health promotion
11 MeSH DESCRIPTOR Outcome and Process Assessment (Health Care)
12 (behavio?r* or lifestyle* or "life style*") AND (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)
13 (motivat*):TI
14 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13
15 MeSH DESCRIPTOR Exercise EXPLODE ALL TREES
16 MeSH DESCRIPTOR Exercise Movement Techniques EXPLODE ALL TREES

17 MeSH DESCRIPTOR Sports EXPLODE ALL TREES
18 MeSH DESCRIPTOR Exercise therapy EXPLODE ALL TREES
19 (physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*):TI AND (fit* or activ* or train*):TI
20 MeSH DESCRIPTOR Sedentary Lifestyle
21 (exercis*):TI
22 (sedentary) AND (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)
23 MeSH DESCRIPTOR Feeding Behavior
24 MeSH DESCRIPTOR FOOD PREFERENCES
25 MeSH DESCRIPTOR Nutrition therapy
26 MeSH DESCRIPTOR Diet
27 MeSH DESCRIPTOR body mass index
28 MeSH DESCRIPTOR healthy diet
29 (diet*):TI
30 (health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) AND (eat* or diet* or food* or nutrition* or weight* or overweight)
31 (fruit* or vegetable*) AND (intake* or consum* or eat* or ate)
32 #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31
33 MeSH DESCRIPTOR Smoking
34 MeSH DESCRIPTOR Smoking cessation
35 MeSH DESCRIPTOR Tobacco use cessation
36 MeSH DESCRIPTOR Tobacco use EXPLODE ALL TREES
37 MeSH DESCRIPTOR Tobacco use disorder
38 MeSH DESCRIPTOR vaping EXPLODE ALL TREES
39 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*)
40 MeSH DESCRIPTOR tobacco use cessation products
41 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas)
42 (smoking* or smoker* or antismok* or anti smok* or anti-smok*)
43 (tobacco* or nicotin* or cigar* or cigs)
44 #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43
45 MeSH DESCRIPTOR Alcohol-related disorders EXPLODE ALL TREES
46 MeSH DESCRIPTOR Alcohol drinking EXPLODE ALL TREES
47 MeSH DESCRIPTOR Alcoholic beverages EXPLODE ALL TREES
48 MeSH DESCRIPTOR drinking behavior
49 (Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) AND (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)
50 #45 OR #46 OR #47 OR #48 OR #49

51 MeSH DESCRIPTOR sexual behavior EXPLODE ALL TREES
52 MeSH DESCRIPTOR reproductive behavior EXPLODE ALL TREES
53 MeSH DESCRIPTOR sex education
54 MeSH DESCRIPTOR sexually transmitted diseases EXPLODE ALL TREES
55 MeSH DESCRIPTOR HIV
56 MeSH DESCRIPTOR blood-borne pathogens
57 MeSH DESCRIPTOR pregnancy, unplanned
58 MeSH DESCRIPTOR contraception EXPLODE ALL TREES
59 MeSH DESCRIPTOR pregnancy in adolescence
60 MeSH DESCRIPTOR pregnancy, unwanted
61 MeSH DESCRIPTOR contraceptive agents
62 MeSH DESCRIPTOR condoms
63 MeSH DESCRIPTOR condoms, female
64 MeSH DESCRIPTOR contraception behavior EXPLODE ALL TREES
65 (contracep* or condom*)
66 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*)
67 (sex* or intercourse or coit*) AND (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)
68 (pregnan*) AND (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)
69 (birth) AND (control*)
70 (famil*) AND (plan*)
71 #51 OR #52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70
72 #32 OR #44 OR #50 OR #71
73 MeSH DESCRIPTOR Telemedicine
74 MeSH DESCRIPTOR Therapy, Computer-Assisted
75 MeSH DESCRIPTOR User-Computer Interface
76 MeSH DESCRIPTOR Software design
77 MeSH DESCRIPTOR Multimedia
78 MeSH DESCRIPTOR Computers, Handheld
79 MeSH DESCRIPTOR Videotape Recording
80 MeSH DESCRIPTOR Internet
81 MeSH DESCRIPTOR Social Networking
82 MeSH DESCRIPTOR Blogging
83 MeSH DESCRIPTOR social media
84 MeSH DESCRIPTOR Electronic Mail
85 MeSH DESCRIPTOR cell phones
86 MeSH DESCRIPTOR text messaging
87 MeSH DESCRIPTOR Smartphone
88 MeSH DESCRIPTOR Mobile Applications

89 MeSH DESCRIPTOR Video games
90 MeSH DESCRIPTOR Virtual Reality Exposure Therapy
91 ((digital* or digitis* or digitiz* or electronic*)) AND ((intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*))
92 ((telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*))
93 ((ehealth* or e-health* or mhealth* or m-health* or mobile health*))
94 ((laptop or palm or handheld or tablet or pda or pc)) AND (comput*)
95 ((mobile* or cell* or tablet*)) AND ((phone* or telephone* or handset* or hand-set*))
96 ((smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*))
97 ((mobile or electronic* or digital*)) AND ((device* or tablet*))
98 ((mobile or electronic* or digital* or device* or software*)) AND (application*)
99 ((app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*))
100 ((e-mail* or email* or electronic mail*))
101 ((text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*))
102 ((Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*))
103 ((social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*))
104 ((virtual or augmented)) AND (reality)
105 MeSH DESCRIPTOR Speech Recognition Software
106 ((voice* or speech or speak*)) AND (response*) AND ((interact* or unit*))
107 (IVR)
108 #73 OR #74 OR #75 OR #76 OR #77 OR #78 OR #79 OR #80 OR #81 OR #82 OR #83 OR #84 OR #85 OR #86 OR #87 OR #88 OR #89 OR #90 OR #91 OR #92 OR #93 OR #94 OR #95 OR #96 OR #97 OR #98 OR #99 OR #100 OR #101 OR #102 OR #103 OR #104 OR #105 OR #106 OR #107
109 #14 AND #72 AND #108
110 (#109) IN NHSEED, HTA FROM 2000 TO 2019

Database name: Econlit

1 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (1335)

2 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab. (4267)
3 motivat*.ti. (2385)
4 or/1-3 (7713)
5 ((physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*) adj3 (fit* or activ* or train*)).ti. (313)
6 exercis*.ti. (982)
7 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (30)
8 diet*.ti. (589)
9 ((health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (3617)
10 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (140)
11 or/5-10 (5350)
12 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (26)
13 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (18)
14 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (2028)
15 (tobacco* or nicotin* or cigar* or cigs).tw. (2513)
16 or/12-15 (3638)
17 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (1658)
18 (contracep* or condom*).tw. (1206)
19 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (936)
20 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*).tw. (2056)
21 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (280)
22 (birth adj control*).tw. (191)
23 (famil* adj3 plan*).tw. (959)
24 or/18-23 (4585)
25 or/11,16-17,24 (14591)
26 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (1567)
27 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (50)
28 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (61)

29 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (62)
30 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (1151)
31 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (342)
32 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (218)
33 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (346)
34 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (15934)
35 (e-mail* or email* or electronic mail*).tw. (528)
36 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (263)
37 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or fitbit*).tw. (1824)
38 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (36084)
39 ((virtual or augmented) adj3 reality).tw. (78)
40 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw. (6)
41 IVR.tw. (8)
42 or/26-41 (54807)
43 and/4,25,42 (20)
44 limit 43 to yr="2000 -Current" (19)

Appendix E – Public health evidence tables

Agboola et al. 2016

Bibliographic reference/s	**Agboola Stephen, Jethwani Kamal, Lopez Lenny, Searl Meghan, O'Keefe Sandra, and Kvedar Joseph (2016) Text to Move: A Randomized Controlled Trial of a Text-Messaging Program to Improve Physical Activity Behaviors in Patients With Type 2 Diabetes Mellitus. Journal of medical Internet research 18(11), e307**		
Study name	Text to Move		
Registration			
Study type	RCT		
Study dates	July 2012 to October 2013		
Objective	To evaluate the effectiveness of sending daily PA-focused text messages versus no text messages on PA in people with T2DM.		
Country/ Setting	4 health care centres affiliated with a large academic medical centre, (likely) Massachusetts, USA.		
Number of participants / clusters	126 participants were enrolled. A sample size of 60 participants per group was calculated as sufficient to detect a true difference of 1500 in mean step count between control and intervention arms with 80% power and a 2-sides 0.05 significance level, adjusted for a 20% drop-out.		
Attrition	12/126 withdrew; 1/126 was excluded post-randomisation due to not fitting all inclusion criteria; 12/126 were lost to follow-up		
Participant /community characteristics.		**Intervention (n=64)**	**Control (62)**
	Age (years), mean (SD)	50.3 (10.5)	52.6 (12.6)
	Gender (% male)	36 (56)	25 (40)
	Education, n (%)		
	-Grade 1-8	4 (6)	6 (10)
	-Grade 9-11	6 (9)	5 (8)
	-Grade 12 or GED	28 (44)	13 (22)
	-1-3 years college	18 (28)	19 (32)
	-≥4 years of college	8 (13)	17 (28)
	Employment, n (%)		
	-Full time	33 (52)	32 (52)
	-Part time	8 (13)	6 (10)
	-Unemployed	9 (14)	12 (19)
	-Homemaker	4 (6)	3 (5)
	-Retired	3 (5)	7 (11)

Bibliographic reference/s	**Agboola Stephen, Jethwani Kamal, Lopez Lenny, Searl Meghan, O'Keefe Sandra, and Kvedar Joseph (2016) Text to Move: A Randomized Controlled Trial of a Text-Messaging Program to Improve Physical Activity Behaviors in Patients With Type 2 Diabetes Mellitus. Journal of medical Internet research 18(11), e307**		
Study name	Text to Move		
	-Disabled	4 (6)	0 (0)
	-Student	1 (2)	0 (0)
	-Other	2 (3)	2 (3)
	PHQ-8 score, n (%)		
	-0-4	46 (73)	41 (67)
	-5-9	13 (21)	15 (25)
	-10-14	1 (2)	3 (5)
	-15-19	2 (3)	2 (3)
	-20-24	1 (2)	0 (0)
	Weight (lb), mean (SD)	215.0 (56.8)	208.2 (46.9)
	There were no significant differences in baseline characteristics.		
Method of allocation	A 1:1 allocation method was used, using a computer-generated permutated block randomisation schedule, with block sizes ranging from 2 to 10. An independent researcher chose blocks and treatment and treatment assignments concealed in opaque envelopes. Participants and research assistants were not blinded to treatment assignment, but investigators were not aware of treatment assignments.		
Inclusion criteria	English- or Spanish-speaking; aged >18 years, diagnosis of T2DM; most recent HbA1c >7.0%; a computer with internet access at home or at work available; willing to attend 2 in-person study visits and willing to receive a minimum of 60 text messages per month for 6 months.		
Exclusion criteria	Significant cognitive deficits; physical disabilities; medical or other surgical conditions precluding participation in moderate PA.		
Intervention	**TIDieR Checklist criteria**	**Details**	
	Brief Name		
	Rationale/theory/Goal	the transtheoretical model of behaviour change	
	Materials used	Both intervention and control groups received usual care, a pedometer and reminder telephone calls to people who did not upload data after 5 days. A bank of 1000 messages were developed by physicians, nurses, behavioural psychologists, health educators, health coaches and social workers. Text messages were designed using health literacy concepts so they could be understood at a third grade reading level and were available in Spanish.	
	Procedures used		

Bibliographic reference/s	**Agboola Stephen, Jethwani Kamal, Lopez Lenny, Searl Meghan, O'Keefe Sandra, and Kvedar Joseph (2016) Text to Move: A Randomized Controlled Trial of a Text-Messaging Program to Improve Physical Activity Behaviors in Patients With Type 2 Diabetes Mellitus. Journal of medical Internet research 18(11), e307**	
Study name	Text to Move	
		Text messages were designed to provide bite-sized (160 characters) coaching based on daily step counts and present PA goals. Morning messages provided feedback on previous day's activity. If no activity was uploaded, a reminder to upload was sent. Evening messages focused on coaching such as support, health education, motivation and reminders to engage in healthy behaviours. In general, the text messages focused on a stage of behaviour change, and suggested additional ways to engage in PA, such as dancing, gardening, walking to lunch, walking the dog, parking further away from the worksite etc. Some messages were 2-way messages with short structured responses. Transition into a different stage of behaviour change was assessed monthly and determined by attainment of activity goals captured by pedometers and responses to items from the PA stage of change questionnaire delivered by text message.
	Provider	-
	Digital platform	Text message
	Location	-
	Duration	6 months
	Intensity	At least 2 text messages per day (between 9am-11am and 6pm); 2 messages a week were interactive 2-way messages.
	Tailoring/adaptation	Messages were tailored according to PA goals and demographic and behavioural data collected at baseline visit. They were designed to target an individual's stage of behaviour change as determined by the transtheoretical model of behaviour change, using grounded theory to group messages.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6 months	
Data collection	Baseline demographic data, PA level and overall health collected through questionnaires at an enrolment practice visit (demographic questionnaire; PA Stages of Change Questionnaire [based on transtheoretical model of change], and the Patient Health Questionnaire (PHQ-8) [a screener for depression]).	

<table>
<tr><td>Bibliographic reference/s</td><td>Agboola Stephen, Jethwani Kamal, Lopez Lenny, Searl Meghan, O'Keefe Sandra, and Kvedar Joseph (2016) Text to Move: A Randomized Controlled Trial of a Text-Messaging Program to Improve Physical Activity Behaviors in Patients With Type 2 Diabetes Mellitus. Journal of medical Internet research 18(11), e307</td></tr>
<tr><td>Study name</td><td>Text to Move</td></tr>
<tr><td></td><td>Primary outcome was mean step counts collected from pedometer readings.
Follow-up visits were conducted in-person by research assistants at 6-months. Participants completed the study surveys (PA Stages of Change Questionnaire, study specific usability and satisfaction questionnaires), had follow-up HbA1c tests, and measured weight.</td></tr>
<tr><td>Critical outcomes measures and effect size</td><td>
<table>
<tr><th></th><th>Intervention</th><th>Control</th><th>Effect (95% CI)</th></tr>
<tr><td>Total monthly step count, month 6, least square mean</td><td>1041</td><td>342</td><td>RR 3.04 (0.36 to 25.93)</td></tr>
<tr><td>Median monthly step count, month 6</td><td>14,180, IQR 0 to 74,302</td><td>8,220, IQR 0 to 56,150</td><td>-</td></tr>
<tr><td>Change in glycated haemoglobin A1c, over 6 months</td><td>-0.43</td><td>-0.21</td><td>MD 0.22 (-0.19 to 0.64)</td></tr>
</table>
<table>
<tr><th></th><th>Intervention n=46</th><th>Control n=49</th></tr>
<tr><td>Adherence to activity tracking at 6 months, n (%)</td><td>31 (67)</td><td>27 (55)</td></tr>
</table>
35% (16) participants in the intervention group engaged with the intervention by responding to at least 1 text message per week for the entire duration.
Data was also collected for months 1-5, but this has not been extracted.</td></tr>
<tr><td>Important outcomes measures and effect size</td><td>-</td></tr>
<tr><td>Statistical Analysis</td><td>All step counts <100 were removed from analysis as ‘noise data’. Last observation carried forward was used for missing data from dropouts and loss to follow up for intention to treat analysis.
Baseline characteristics were compared using independent t tests or chi-square tests as appropriate. Monthly step counts were log transformed for normalisation. Least-square means of the log-transformed monthly step counted were back-log transformed to generate final estimates of least-square means.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement (low/high/some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low risk</td><td>Independent researcher used computer generated code to assign groups</td></tr>
<tr><td>Allocation concealment</td><td>Low risk</td><td>Due to nature of intervention participants</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Agboola Stephen, Jethwani Kamal, Lopez Lenny, Searl Meghan, O'Keefe Sandra, and Kvedar Joseph (2016) Text to Move: A Randomized Controlled Trial of a Text-Messaging Program to Improve Physical Activity Behaviors in Patients With Type 2 Diabetes Mellitus. Journal of medical Internet research 18(11), e307**		
Study name	Text to Move		
			could not be blinded, however outcome measures were objective.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	No evidence of deviations from intervention
	Risk of bias due to deviations from intended interventions (adherence)	Some concerns	Adherence dropped throughout the follow-up period, however there was no difference in adherence between the control and intervention group
	Missing outcome data	Low risk	Intention to treat analysis performed.
	Risk of bias in measurement of the outcome	High risk	Measurement using pedometers and other objective measures. However, total monthly step counts appear unfeasibly low, therefore possible that pedometer technology inaccurate.
	Risk of bias in selection of the reported result	Low risk	No evidence of outcomes in methods not reported.
	Other sources of bias	Low risk	None identified
	Overall Risk of Bias	High	
Source of funding	The McKesson Foundation		
Comments	-		
Additional references	-		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning	X	

Bibliographic reference/s	**Agboola Stephen, Jethwani Kamal, Lopez Lenny, Searl Meghan, O'Keefe Sandra, and Kvedar Joseph (2016) Text to Move: A Randomized Controlled Trial of a Text-Messaging Program to Improve Physical Activity Behaviors in Patients With Type 2 Diabetes Mellitus. Journal of medical Internet research 18(11), e307**	
Study name	Text to Move	
	Social support	
	Self-belief	
	Comparison of outcomes	
	Comparison of behaviour	
	Identity	
	Shaping knowledge	
	Regulation	

Alexander et al 2010

Bibliographic reference/s	**Alexander G L, McClure J B, Calvi J H, Divine G W, Stopponi M A, Rolnick S J, Heimendinger J, Tolsma D D, Resnicow K, Campbell M K, Strecher V J, and Johnson C C (2010) A randomized clinical trial evaluating online interventions to improve fruit and vegetable consumption. American journal of public health 100(2), 319-326**				
Study name	A Randomized Clinical Trial Evaluating Online Interventions to Improve Fruit and Vegetable Consumption				
Registration	Not reported.				
Study type	RCT, adults				
Study dates	Subjects recruited between September 2005 and March 2006.				
Objective	To assess change in F&V intake, compare an online untailored program with a tailored behavioural intervention and a tailored behavioural intervention plus e-mail.				
Country/ Setting	USA, health plans				
Number of participants / clusters	Total number of participants – 2513, those with no chronic conditions				
Attrition	Of 28,460 people invited, 4270 (15%) signed on to the study Web site and 2,540 (8.9%) participated (Figure 1). Data were dropped for 27 participants whose baseline and follow-up responses were inconsistent on key factors (e.g., gender, birth date), yielding 2513 participants. Follow-up participation rates were 86% at 3 months, 80% at 6 months, and 80% at 12 months. Of the 2513 enrolees, 99.9% provided complete 2-item baseline responses and 97% provided complete 16-item baseline responses. For analysis, 80% provided usable 2-item survey data at both baseline and 12 months, and 71% provided usable 16-item survey data at both assessments.				
Participant /community characteristics.		**Total (n=2513)**	**Arm 1 (n=836)**	**Arm 2 (n-839)**	**Arm 3 (n=838)**
	Age, mean (SD)	46.3 (10.8)	46.1 (10.6)	46.5 (10.8)	46.4 (10.9)

Bibliographic reference/s	**Alexander G L, McClure J B, Calvi J H, Divine G W, Stopponi M A, Rolnick S J, Heimendinger J, Tolsma D D, Resnicow K, Campbell M K, Strecher V J, and Johnson C C (2010) A randomized clinical trial evaluating online interventions to improve fruit and vegetable consumption. American journal of public health 100(2), 319-326**				
Study name	A Randomized Clinical Trial Evaluating Online Interventions to Improve Fruit and Vegetable Consumption				
	Female, no (%)	1729 (69)	576 (69)	577 (69)	576 (69)
Method of allocation	Participants, who were stratified by health plan, gender, and baseline stage of change (a measure of reported readiness to change, ranging from no intention to change [pre-contemplative] to already making changes were randomly assigned to 1 of 3 experimental arms: an untailored control Web site (arm 1), a tailored Web site (arm 2), or the tailored Web site plus motivational interviewing counselling delivered via e-mail (arm 3).				
Inclusion criteria	No evidence of a health condition contraindicating an increase in fruit and vegetable intake.				
Exclusion criteria	Not reported				
Intervention	**TIDieR Checklist criteria**	**Details**			
	Brief Name	Web based Making Effective Nutritional Choices (MENU) program			
	Rationale/theory/Goal	Arm 1 – online untailored website (general F&V info) Arm 2 – Tailored website based on behaviour change theories Arm 3 Tailored website plus motivational counselling via email.			
	Materials used	Internet & website			
	Procedures used	Website included core content, illustrations, optional links to more detailed explanations, and special features designed to supplement session content. E.g. special features illustrated serving sizes and F&V based recipes. Optional short video and audio files were offered to reinforce text on behavioural strategies.			
	Provider	Arm 1 and 2 were provided solely by the internet programme. Arm 3 involved face to face and email counselling with a trained therapeutic counsellor.			
	Digital platform	Computer tailored or untailored programme			
	Location	USA			
	Duration	For each arm, the Web program was divided into 4 intervention “sessions” offered 1, 3, 13, and 15 weeks after enrolment; automated e-mails notified participants when a new Web site session was available.			
	Intensity	Each session included 4 to 5 pages of core content, illustrations, optional links to more			

Bibliographic reference/s	**Alexander G L, McClure J B, Calvi J H, Divine G W, Stopponi M A, Rolnick S J, Heimendinger J, Tolsma D D, Resnicow K, Campbell M K, Strecher V J, and Johnson C C (2010) A randomized clinical trial evaluating online interventions to improve fruit and vegetable consumption. American journal of public health 100(2), 319-326**	
Study name	A Randomized Clinical Trial Evaluating Online Interventions to Improve Fruit and Vegetable Consumption	
		detailed explanations, and special features designed to supplement session content
	Tailoring/adaptation	The tailored Web site's content matched needs, dietary preferences, and interests expressed in the baseline and 3-month surveys. The control arm provided general fruit and vegetable nutrition information without any tailoring. Behavioural sessions in arms 2 and 3 were tailored to the participant's stage of change and designed to increase motivation and self-efficacy for eating fruits and vegetables. The welcome page displayed current intake compared with the expanded "goal" intake of 5 to 9 daily servings, and a goal-setting tool was available to aid in planning for change. An optional feature offered menus individually tailored by nutrition experts and generated on the basis of participants' fruit and vegetable preferences and dietary restrictions. Additionally, 60-second video clips of recipe preparation were available as optional support. Participants in the tailored intervention could also create their own menus from the recipe library.
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc
	Other details	N/A
Follow up	3, 6 and 12 months (data only useable at 12 months)	
Data collection	Method by which data collected (survey, validated measure etc). The primary measure was a 16-item fruit and vegetable food frequency questionnaire developed by the NCI, which queried frequency and portion size over the past month. A second short assessment, which appeared first in the survey, was a 2-item measure that included question each asking about total servings of fruits and of vegetables consumed on a typical day. This measure was included at baseline and at all follow-up surveys. Guidelines for estimating 1 serving size were included in the 2-item questions (e.g., 1 piece of fruit, 3/4 cup of 100% juice, 1/2 cup canned fruit, or 1/4 cup dried fruit) to improve validity. The validity of these scales has been previously reported.	
Critical outcomes measures and effect size. (time points)	**16 item FFQ measure of F&V intake (used in meta-analysis):**	

Study arm	No. of participants at	Servings at baseline, No. (SD)	No. of participants at 12 months	Servings at 12 months, No. (SD)	Adjusted no. at 12 months *	Adjusted mean change **

Bibliographic reference/s	**Alexander G L, McClure J B, Calvi J H, Divine G W, Stopponi M A, Rolnick S J, Heimendinger J, Tolsma D D, Resnicow K, Campbell M K, Strecher V J, and Johnson C C (2010) A randomized clinical trial evaluating online interventions to improve fruit and vegetable consumption. American journal of public health 100(2), 319-326**
Study name	A Randomized Clinical Trial Evaluating Online Interventions to Improve Fruit and Vegetable Consumption

	base line					
Arm 1	818	4.57 (2.9)	619	6.83 (3.5)	611	2.34
Arm 2	812	4.23 (2.7)	613	6.98 (3.7)	599	2.68
Arm 3***	811	4.46 (2.7)	588	7.18 (3.4)	578	2.80

***** data from arm 3 not used in our analysis as the intervention does not fit the protocol**

Study arm	**No. of participants at baseline**	**Servings at baseline, No. (SD)**	**No. of participants at 12 months**	**Servings at 12 months, No. (SD)**	**Adjusted no. at 12 months***	**Adjusted mean change****
Arm 1	836	3.28 (1.6)	681	5.71 (1.8)	681	2.38
Arm 2	837	3.24 (1.6)	671	5.85 (1.8)	669	2.55
Arm 3***	837	3.35 (1.6)	661	5.93 (1.8)	661	2.55

Important outcomes measures and effect size. (time points)	N/A
Statistical Analysis	*Adjusted numbers indicate participants who completed both baseline and 12-month data. **Adjusted for baseline serving intake. ***Arm 3 will not be included in the data analysis for this review as it includes motivational counselling with a trained therapeutic expert which is not of the interest of this guideline

Risk of bias (ROB)	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**

Bibliographic reference/s	**Alexander G L, McClure J B, Calvi J H, Divine G W, Stopponi M A, Rolnick S J, Heimendinger J, Tolsma D D, Resnicow K, Campbell M K, Strecher V J, and Johnson C C (2010) A randomized clinical trial evaluating online interventions to improve fruit and vegetable consumption. American journal of public health 100(2), 319-326**		
Study name	A Randomized Clinical Trial Evaluating Online Interventions to Improve Fruit and Vegetable Consumption		
Overall ROB	Risk of bias arising from the randomisation process	Some concerns	Randomisation present. No information on concealment. Despite randomization, statistically significant differences were found in reported fruit and vegetable intake at baseline by study arm when the 16-item measure was used, with fewer servings in arm 2.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	No information on blinding or deviations from intended interventions
	Risk of bias due to deviations from intended interventions (adherence)	Low	High retention rates throughout the 12 months period.
	Missing outcome data	Low	Data only dropped for 27 participants whose baseline and follow-up responses were inconsistent on key factors (e.g., gender, birth date), yielding 2513 participants. Follow-up participation rates were 86% at 3 months, 80% at 6 months, and 80% at 12 months
	Risk of bias in measurement of the outcome	Some concerns	Outcome assessment may be affected by knowledge of intervention received (no information on blinding) – need to report better outcomes / social desirability bias.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	

Bibliographic reference/s	**Alexander G L, McClure J B, Calvi J H, Divine G W, Stopponi M A, Rolnick S J, Heimendinger J, Tolsma D D, Resnicow K, Campbell M K, Strecher V J, and Johnson C C (2010) A randomized clinical trial evaluating online interventions to improve fruit and vegetable consumption. American journal of public health 100(2), 319-326**	
Study name	A Randomized Clinical Trial Evaluating Online Interventions to Improve Fruit and Vegetable Consumption	
Source of funding	Trial conducted through the Cancer Research Network, a consortium of 14 research organizations affiliated with non-profit integrated health care delivery systems and the NCI	
Comments	N/A	
Additional references	N/A	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Comparison of behaviour	
	Identity	
	Shaping knowledge	
	Regulation	

Allen et al 2013

Bibliographic reference/s	**Allen JK, Stephens J, Dennison H, Cheryl R, Stewart KJ, and Hauck S (2013) Randomized controlled pilot study testing use of smartphone technology for obesity treatment. Journal of obesity 2013, 151597**
Study name	Randomised controlled pilot study testing use of smartphone technology for obesity treatment
Registration	
Study type	RCT, adults
Study dates	
Objective	The major goals of this pilot; to evaluate the feasibility, acceptability and preliminary efficacy of theoretically based behavioural interventions delivered by smartphone technology to increase physical activity and decrease calorific intake resulting in weight loss and improvements in body composition in people overweight or obese.

Bibliographic reference/s	**Allen JK, Stephens J, Dennison H, Cheryl R, Stewart KJ, and Hauck S (2013) Randomized controlled pilot study testing use of smartphone technology for obesity treatment. Journal of obesity 2013, 151597**		
Study name	Randomised controlled pilot study testing use of smartphone technology for obesity treatment		
Country/ Setting			
Number of participants / clusters	N=68; - N=18 (IC) - N=16 (IC+SP) - N=17 (LIC+SP) - N=17 (SP)		
Attrition	High attrition rates among the 4 groups (31-41%) N=43 (63%) returned at 6months for follow-up measurements		
Participant /community characteristics	No differences between groups in sociodemographic and baseline anthropometric measures among the groups. 78% female, 49% black, average age 45±11yrs, BMI 34.3±3.9kg/m^2		
Method of allocation	Recruited via flyers, physician referrals, existing lists of volunteers from prior studies of the investigators. Randomisation methods not reported		
Inclusion criteria	21-65yrs, BMI 28-42km/m^2, iPhone or android and willing to download the application		
Exclusion criteria	History of MI, angina, CABG surgery, percutaneous transluminal coronary angioplasty, congestive heart failure, diabetes. No condition significantly limiting exercise. Participating in another weight loss programme, pregnant or planning to become pregnant. Taking weight loss medication, history of psychiatric illness. Alcohol, or substance abuse within past 12months		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	SLIM (Smart coach for Lifestyle Management)	
	Rationale/theory/Goal	Based on an eclectic theoretical approach using multiple behavioural theories; social cognitive theory, behavioural self-management, and motivational interviewing counselling techniques that were used in prior studies. Goals were 5% weight loss and ≥150mins moderate or greater intensity exercise	
	Materials used	Smartphone	
	Procedures used		
	Provider		
	Digital platform	(IC) established intensive diet and exercise counselling intervention (IC+SP) established intensive diet and exercise counselling plus self-monitoring smartphone intervention (LIC+SP) less intensive diet and exercise counselling plus self-monitoring smartphone intervention	

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Allen JK, Stephens J, Dennison H, Cheryl R, Stewart KJ, and Hauck S (2013) Randomized controlled pilot study testing use of smartphone technology for obesity treatment. Journal of obesity 2013, 151597</td></tr>
<tr><td>Study name</td><td colspan="2">Randomised controlled pilot study testing use of smartphone technology for obesity treatment</td></tr>
<tr><td rowspan="7"></td><td></td><td>(SP) self-monitoring smartphone intervention only</td></tr>
<tr><td>Location</td><td>USA</td></tr>
<tr><td>Duration</td><td>6 months</td></tr>
<tr><td>Intensity</td><td>Counselling sessions of 1hr
1) and 2) healthy eating and exercise counselling from a nutritionist coach weekly (first month), biweekly (second to sixth month)
3) healthy eating and exercise counselling from a nutritionist twice (first month), monthly (second to sixth month)
Lose It! weight loss application promoted self-management and mindful empowerment. Provided real time feedback and motivators and opportunities for social networking and support. Participant recorded food intake and exercise via touch screen – instant real-time calculation of current energy balance allowed participant to track (included charts and graphs that tracked progress). Participants encouraged to weigh themselves weekly</td></tr>
<tr><td>Tailoring/adaptation</td><td>No tailoring reported for self-monitoring smartphone intervention only.</td></tr>
<tr><td>Planned treatment fidelity</td><td></td></tr>
<tr><td>Actual treatment fidelity</td><td></td></tr>
<tr><td>Other details</td><td></td></tr>
<tr><td>Follow up</td><td colspan="2">6 months</td></tr>
<tr><td>Data collection</td><td colspan="2">Weight, BMI, waist circumference, physical activity (Stanford 7-Day Physical Activity Recall), dietary intake data (3-day food records)</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Primary outcomes; changes in weight, % reduction in weight, BMI, waist circumference
Secondary outcomes; changes in diet and physical activity

<table>
<tr><td></td><td>IC (N=18)</td><td>IC+SP (N=16)</td><td>LIC+SP (N=17)</td><td>SP (N=17)</td><td>P value</td></tr>
<tr><td>Body weight change, mean (SD)</td><td>-2.5 (4.1)</td><td>-5.4 (4.0)</td><td>-3.3 (5.9)</td><td>-1.8 (3.7)</td><td>0.89</td></tr>
<tr><td>BMI change, mean (SD)</td><td>-0.8 (1.4)</td><td>-1.8 (1.3)</td><td>-1.1 (2.0)</td><td>-0.7 (1.3)</td><td>0.79</td></tr>
<tr><td>Waist change (male), mean (SD)</td><td>-3.0 (2.4)</td><td>-7.0 (2.6)</td><td>-6.5 (0.35)</td><td>-3.38 (8.3)</td><td>0.36</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td>Allen JK, Stephens J, Dennison H, Cheryl R, Stewart KJ, and Hauck S (2013) Randomized controlled pilot study testing use of smartphone technology for obesity treatment. Journal of obesity 2013, 151597</td></tr>
<tr><td>Study name</td><td>Randomised controlled pilot study testing use of smartphone technology for obesity treatment</td></tr>
<tr><td></td><td>
<table>
<tr><td>Waist change (female), mean (SD)</td><td>-3.19 (7.4)</td><td>-5.68 (3.7)</td><td>-3.64 (7.9)</td><td>-0.88 (2.9)</td><td>0.22</td></tr>
<tr><td>Self-report activity ≥moderate activity, mean hrs/wk (SD)</td><td>-1.4 (7.0)</td><td>-2.0 (5.4)</td><td>-3.6 (5.5)</td><td>0.19 (5.1)</td><td>0.51</td></tr>
<tr><td>Dietary intake, mean kcal/day (SD)</td><td>-415.6 (376.4)</td><td>-468.2 (634.0)</td><td>-218.5 (859.5)</td><td>-249.2 (770.5)</td><td>0.66</td></tr>
<tr><td>Calories from fat, mean % (SD)</td><td>-0.67 (4.5)</td><td>-4.89 (9.3()</td><td>-4.6 (4.5)</td><td>-3.48 (12.5)</td><td>0.37</td></tr>
<tr><td>Fruit and veg intake, servings/day, mean (SD)</td><td>0.81 (2.8)</td><td>0.51 (3.2)</td><td>2.1 (3.4)</td><td>0.05 (4.9)</td><td>0.61</td></tr>
</table>
Utilisation;
<table>
<tr><td></td><td>IC (N=18)</td><td>IC+SP (N=16)</td><td>LIC+SP (N=17)</td><td>SP (N=17)</td></tr>
<tr><td>Counselling sessions attended, mean % (SD)</td><td>58 (37)</td><td>72(31)</td><td>66(34)</td><td>N/A</td></tr>
<tr><td>Days of diet SP entries, median % (IQR)</td><td>N/A</td><td>53 (37)</td><td>58(58)</td><td>23 (39)</td></tr>
<tr><td>Days of physical activity SP entries, median % (IQR)</td><td>N/A</td><td>32 (43)</td><td>23 (42)</td><td>9 (33)</td></tr>
</table>
(also reported, not extracted; sodium intake, satisfaction)
</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>N/A</td></tr>
<tr><td>Statistical Analysis</td><td>Pilot study – not powered.
Outcome data, Wilcoxon signed rank test. Chose not to impute data or carry forward the baseline value for missing data for an ITT analysis. Sensitivity analysis only on those who completed 6month follow-up did not produce different results.
Analysed in each group; IC (N=12), IC+SP (N=11), LIC+SP (N=10), SP (N=10)</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low</td><td>Randomisation present by computer. There were no statistically significant differences between the intervention and</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Allen JK, Stephens J, Dennison H, Cheryl R, Stewart KJ, and Hauck S (2013) Randomized controlled pilot study testing use of smartphone technology for obesity treatment. Journal of obesity 2013, 151597**		
Study name	Randomised controlled pilot study testing use of smartphone technology for obesity treatment		
			control participants at baseline
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	No information on blinding
	Risk of bias due to deviations from intended interventions (adherence)	Some concerns	Adherence to the recommended intervention varied across groups
	Missing outcome data	Low	High attrition rates among the 4 groups (31-41%) N=43 (63%) returned at 6mths for follow-up measurements.
	Risk of bias in measurement of the outcome	Some concerns	None blinding may have resulted in some bias of results.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding	Grant from the center for behaviour and health, John Hopkins Medicine		
Comments	N/A		
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		X
	Social support		
	Self-belief		
	Comparison of outcomes		
	Identity		

Bibliographic reference/s	**Allen JK, Stephens J, Dennison H, Cheryl R, Stewart KJ, and Hauck S (2013) Randomized controlled pilot study testing use of smartphone technology for obesity treatment. Journal of obesity 2013, 151597**
Study name	Randomised controlled pilot study testing use of smartphone technology for obesity treatment
	Shaping knowledge
	Regulation
	Comparison of behaviour

Apiñaniz et al 2019

Bibliographic reference/s	Apiñaniz A; Cobos-Campos R; Sáez de Lafuente-Moŕiñigo A; Parraza N; Aizpuru F; Pérez I; Goicoechea E; Trápaga N; García L. Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients. Family Practice. 2019 May cmz020
Study name	Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients.
Registration	NCT02308176
Study type	RCT
Study dates	November 2015 – December 2016.
Objective	To test the efficacy of a mobile app for reinforcing health advice and promoting weight loss in overweight and obese patients.
Country/ Setting	Basque public health network
Number of participants / clusters	n=110 randomised n=56 in intervention group n=54 in control group
Attrition	n=23 (41%) lost to follow-up in intervention group n=21 (39%) lost to follow-up in control group
Participant /community characteristics	See table below
Method of allocation	Randomization sequence was generated by computer and kept hidden from researchers
Inclusion criteria	BMI ≥25 kg/m^2; 18-45 years old; in contemplation stage of change; had a smartphone.

	Control (n=54)	Intervention (n=56)
Sex, %female	67.9	75.9
Age, mean years (±SD)	38.8 (5.4)	38.3 (4.5)
BMI, mean kg/m^2 (±SD)	32.08 (4.51)	33.41 (5.27)
Type of work, %sedentary	53.6	53.7
%smoker	23.2	13
%habitual drinker	14.3	11.1
%hypertension treatment	5.4	5.6
%adherence to recommended fruit and vegetable intake	48.2	50
%hypothyroidism	14.6	5.6

Bibliographic reference/s	Apiñaniz A; Cobos-Campos R; Sáez de Lafuente-Moŕiñigo A; Parraza N; Aizpuru F; Pérez I; Goicoechea E; Trápaga N; García L. Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients. Family Practice. 2019 May cmz020		
Study name	Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients.		
Exclusion criteria	Physical or mental illness that hindered physical activity. History of myocardial infarction or stroke Participating in another study Pregnant or breastfeeding Under dietary or pharmacological treatment for weight loss		
Intervention	TIDieR Checklist criteria	Paper/Location	Details
	Brief Name	AKTIDIET	
	Rationale/theory/Goal		
	Materials used		
	Procedures used	All participants received health advice on physical activity, including recommendations of what types of exercise to do, for how long and how often, as well as dietary recommendations with guidance on how to act in particular situations (eating at home, celebrations, eating out, etc.). The advice was also provided in writing and the recommendations were based on those of the WHO, the US Centers for Disease Control and Prevention and UK National Institute for Health and Care Excellence. *Intervention* Advice is reinforced by the AKTIDIET app. The app includes a program for aerobic exercise and muscle training, videos on how to do the exercises and a record of food intake. Text messages were sent to reinforce health advice provided during consultation, and to motivate participants. The messages underlined the benefits of exercise, risks of a sedentary lifestyle and the importance of a healthy diet. *Control* The health advice and recommendations were given on paper and no reinforcement of the behaviours was provided.	
	Provider		
	Digital platform	App (primary delivery method) and text messages	
	Location	Health clinics and at home.	
	Duration		

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Apiñaniz A; Cobos-Campos R; Sáez de Lafuente-Moŕiñigo A; Parraza N; Aizpuru F; Pérez I; Goicoechea E; Trápaga N; García L. Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients. Family Practice. 2019 May cmz020</td></tr>
<tr><td>Study name</td><td colspan="2">Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients.</td></tr>
<tr><td rowspan="5"></td><td>Intensity</td><td>Text messages were sent once a day for the first month and then twice a week until 6 months.</td></tr>
<tr><td>Tailoring/adaptation</td><td>None reported.</td></tr>
<tr><td>Planned treatment fidelity</td><td></td></tr>
<tr><td>Actual treatment fidelity</td><td></td></tr>
<tr><td>Other details</td><td></td></tr>
<tr><td>Follow up</td><td colspan="2">6 months</td></tr>
<tr><td>Data collection</td><td colspan="2">Data was collected at baseline, 1, 3, and 6 months. Body weight and adherence to recommendations for physical activity and vegetable and fruit intake were recorded.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Weight change
<table>
<tr><td></td><td>Control (N=54)</td><td>Intervention (N=56)</td></tr>
<tr><td>Body weight change, mean (SD)*</td><td>-1.4 (14.01)</td><td>-3.1 (14.29)</td></tr>
</table>
*data taken from baseline, and multivariate adjusted data at follow-up from ITT analyses.

Adherence
<table>
<tr><td></td><td>Control (N=54)</td><td>Intervention (N=56)</td><td>p value</td></tr>
<tr><td>Adhered to recommendations on fruit and vegetable intake, % (95% CI)</td><td>84.6 (70.7-98.5)</td><td>92.9 (76.5-99.1)</td><td>0.413</td></tr>
<tr><td>Adhered to physical activity recommendations, % (95% CI)</td><td>56 (36.5-75.5)</td><td>75 (59-91)</td><td>0.145</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="2">N/A</td></tr>
<tr><td>Statistical Analysis</td><td colspan="2">Sample size of 96 patients was needed to detect a difference of 3.5kg in weight between groups.
Differences between groups was tested with independent samples t-test and multivariate ANCOVA, including body weight at baseline as a covariate and adjusting for other possible confounding variables.
Both ITT and per protocol analyses per conducted.
Adherence to recommendations were assessed through ANCOVA and chi-square tests for continuous and qualitative variables. Multiple imputation was only carried out for the main outcome variable, the statistical analysis of the secondary outcomes only being performed with the 66 patients who completed the study.</td></tr>
</table>

Bibliographic reference/s	Apiñaniz A; Cobos-Campos R; Sáez de Lafuente-Moŕiñigo A; Parraza N; Aizpuru F; Pérez I; Goicoechea E; Trápaga N; García L. Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients. Family Practice. 2019 May cmz020		
Study name	Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients.		
	Analyses conducted in SPSS 22.0.		
Risk of bias (ROB) Overall ROB	Outcome	Judgement	Comments
	Risk of bias arising from the randomisation process	Low risk	Randomisation sequences generated by computer.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	No deviations from experimental context. ITT analyses performed.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Adherence to intervention high and control group did not have access to intervention.
	Missing outcome data	High risk	High attrition (40%), multiple imputation used to account for missing data and missingness likely to depend on behaviour.
	Risk of bias in measurement of the outcome	Low risk	Method of measurement appropriate.
	Risk of bias in selection of the reported result	Low risk	Reported results do not deviate from prospectively registered protocol.
	Other sources of bias		
	Overall risk of bias	High risk	
Source of funding	No external funding was received for this research.		
Comments	N/A		
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		

Bibliographic reference/s	Apiñaniz A; Cobos-Campos R; Sáez de Lafuente-Moñiñigo A; Parraza N; Aizpuru F; Pérez I; Goicoechea E; Trápaga N; García L. Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients. Family Practice. 2019 May cmz020	
Study name	Effectiveness of randomized controlled trial of a mobile app to promote healthy lifestyle in obese and overweight patients.	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Block et al. 2015; Block et al. 2016

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**
Study name	Alive-PD
Registration	Clinicaltrials.gov NCT01479062
Study type	RCT
Study dates	Not reported
Objective	To study the effects of the automated Alive-PD program on glycaemic biomarkers, weight loss, behaviour change in terms of diet and physical activity in people with T2DM.
Country/ Setting	Community-based multi-speciality group practice in Northern California, USA
Number of participants / clusters	N= 340 With a SD of 1.4 and alpha of 0.05, a sample size of 268 was estimated, which would provide 80% power to detect a minimum detectable difference in change of HbA1c of 0.48%. 15% attrition was expected, making the goal for total sample size of 314.
Attrition	1/340 randomised to intervention excluded due to not meeting inclusion criteria. 302/339 completed 3-month follow up

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**		
Study name	Alive-PD		
	292/339 completed 6-month follow up – 20 control and 27 intervention participants did not complete 6-month follow up (9 lost to follow up and 38 withdrew).		
Participant /community characteristics.		**Intervention, n=163**	**Control, n=176**
	Age (years), mean (SD)	55.0 (8.8)	54.9 (9.1)
	Gender (% male)	111 (68.1)	122 (69.3)
	University educated, n (%)	137 (84.1)	144 (81.8)
	Race, n (%)		
	-White	109 (66.9)	120 (68.2)
	-Hispanic	7 (4.3)	14 (8.0)
	-Asian	41 (25.2)	29 (16.5)
	-Other	6 (3.7)	13 (7.4)
	Metabolic syndrome, n (%)	110 (67.5)	121 (68.8)
	Weight (kg), mean (SD)	93.7 (14.9)	93.3 (16.6)
	BMI (kg/m^2), mean (SD)	21.1 (4.5)	31.2 (4.3)
	There were no significant differences in any baseline characteristic data between intervention and control groups. Participants all had clinical evidence of prediabetes but had not been diagnosed with diabetes.		
Method of allocation	A brief questionnaire was completed online by enrolled participants before randomisation. Automatic randomisation was performed by a computer algorithm. Randomisation was stratified by sex, race/ethnicity (non-Hispanic white/other), and BMI (<35 kg/m^{2}and >35 kg/m^2).		
Inclusion criteria	Inclusion criteria included: aged 30 to 69 years; BMI of at least 27 kg/m^2 (BMI >25 kg/m^2 for Asian participants); English speaking; access to email and internet; either: fasting glucose or HbA1c in the prediabetes range (glucose: 5.5- 6.94 mmol/L or 100-125 mg/dL; HbA1c: 39-46 mmol/mol or 5.7%-6.4%).		
Exclusion criteria	Exclusion criteria included: presence of medical conditions contraindicating gradual adoption of moderate physical activity; taking diabetes or weight loss medications; pregnant or planning pregnancy during study duration; currently doing more than 150 minutes per week of moderate or vigorous physical activity		

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**	
Study name	Alive-PD	
	and currently on a low-carbohydrate diet; current participation in another clinical trial	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	
	Rationale/theory/Goal	
	Materials used	Program of weekly small-step goal setting, plus mid-week automated email and mobile phone reminders. This was supplemented by automated interactive voice response phone calls and a supportive mobile phone app. There was no personal contact or coaching, using a fully automated system. For PA, participants set long-term goals of 150 to 300 minutes aerobic activity per week depending on reported levels at baseline and on subsequent program participation. Resistance training was also encouraged. Changes in food type and reduction in portion size is emphasised, including decreases in simple sugars and refined carbohydrates, decreases in trans fats and saturated fats if found to be excessive; increased F&V, legumes, nuts and seeds intake. Psychosocial issues important in behaviour change are addressed including managing stress and sleep, staying motivated, addressing negative thoughts, modifying the environment to support desired changes and other topics. The system also provides tools for tracking weight, eating and PA; weekly health information on diabetes and strategies for preventing it; quizzes; social support through virtual teams and a participant messaging system; feedback on reported diet and activity and on success or failure of goal achievement and weekly reminders. Engagement is promoted through a points system with modest monetary rewards and team competition. Participants were reminded if they had not chosen a goal for 2 weeks. Control group participants were told they were on a waiting list and could access the intervention after 6 months.
	Procedures used	

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**	
Study name	Alive-PD	
	Provider	Online
	Digital platform	Online
	Location	Online
	Duration	24 weeks
	Intensity	Intervention participants reported they spent approximately 15 minutes interacting with the program in a typical week.
	Tailoring/adaptation	Weekly goal setting was individually tailored
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6 months	
Data collection	Baseline data was collected at a clinic visit following invitation to participate via letter. Participants returned to clinic visits at 3 and 6 months, when laboratory and biometric measurements were taken by trained staff unaware of treatment assignment. Participants were asked about sickness or injury to monitor adverse events.	

Critical outcomes measures and effect size

	Intention to treat, change from baseline at 6-months (95% CI)		
	Intervention, n=163	**Control, n=176**	**P value**
Fasting glucose (mmol/L)	-0.41 (-0.44 to -0.38)	-0.12 (-0.15 to -0.10)	<.001
HbA_{1c} (mmol/mol)	-2.81 (-2.95 to -2.66)	-1.93 (-2.06 to -1.79)	<.001
Weight (kg)	-3.26 (-3.26 to -3.25)	-1.26 (-1.27 to -1.26)	<.001
BMI (kg/m^2)	-1.05 (-1.06 to -1.05)	-0.39 (-0.39 to -0.38)	<.001
Waist (cm)	-4.56 (-4.69 to -4.43)	-2.22 (-2.36 to -2.09)	<.001
Triglyceride /high density lipoprotein ratio	-0.21 (-0.30 to -0.12)	0.21 (0.12 to 0.29)	.04

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**
Study name	Alive-PD

Achieved at least 5% weight loss, n (%)	48/136 (35.3)	13/156 (8.3)	<.001
Lost diagnosis of metabolic syndrome from baseline to 6-months follow-up, n (%)	40/86 (46.5)	22/110 (20.0%)	<.001
Framingham 8-year diabetes risk (%)*	11.0 (10.08 to 11.92)	14.6 (13.64 to 15.54)	<.001
*In both groups, the risk score was 16% at baseline			

	Completers, change from baseline at 6-months (95% CI)		**Effect size**	**P value**
	Intervention, n=163	**Control, n=176**		
Aerobic activity (days per week; mean)	1.21 (0.94 to 1.47)	0.42 (0.20 to 0.64)	0.49	<.001
Consumption of red meat (days per week; mean)	-0.91 (-1.31 to -0.51)	-0.93 (-0.26 to -0.60)	0.07	0.95
Consumption of bread, pasta and white rice (days per week; mean)	-3.77 (-4.44 to -3.10)	-1.99 (-2.55 to -1.44)	0.34	<.001
Consumption of sweets (days per week; mean)	-2.26 (-2.69 to -1.82)	-1.02 (-1.38 to-0.67)	0.40	<.001
Consumption of fruit (days per week; mean)	2.03 (1.43 to 2.62)	0.09 (-0.41 to 0.58)	0.58	<.001

<table>
<tr><td>Bibliographic reference/s</td><td colspan="5">Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240

Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231</td></tr>
<tr><td>Study name</td><td colspan="5">Alive-PD</td></tr>
<tr><td></td><td colspan="5">
<table>
<tr><td>Consumption of vegetables (days per week; mean)</td><td>1.75 (1.14 to 2.35)</td><td>0.05 (-0.45 to 0.55)</td><td>0.43</td><td><.001</td></tr>
<tr><td>Consumption of fruit and vegetables, total (days per week; mean)</td><td>3.71 (2.73 to 4.70)</td><td>0.16 (-0.65 to 0.98)</td><td>0.62</td><td><.001</td></tr>
</table>
Intervention had significantly greater improvements than control group in: self-rated health status, confidence in their ability to make lasting changes in diet and ability to concentrate and accomplish at work (all p<.0001 for difference in change between intervention and control).
Change in confidence in ability to make changes to PA was also significantly different between the 2 groups, p=0.02.
Raw numerical data was not presented for these outcomes.

Intervention participants interacted with the online Alive-PD program in a median of 17 (IQR 14) of 24 weeks.
In all, 87.1% of participants interacted with the program in 4 or more of the 24 weeks and 70.6% were still interacting with the program in the last month of the 6-month period.</td></tr>
<tr><td>Important outcomes measures and effect size</td><td colspan="5">There were no significant differences in adverse events between treatment groups at 6-months follow up (data not shown).</td></tr>
<tr><td>Statistical Analysis</td><td colspan="5">Intention to treat analysis of change in HbA1c, fasting glucose and weight were prespecified. Chi-squared and t-tests were used for continuous baseline characteristics. Linear regression was used for mean between group treatment differences in outcomes. Potential interactions with treatment group according to potential effect modifiers (sex, race/ethnicity, age and BMI) were assessed. Subgroup analysis of participants who were prediabetic by HbA1c at baseline was conducted.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>Outcome</td><td colspan="2">Judgement (low/high/some concerns)</td><td colspan="2">Comments</td></tr>
<tr><td></td><td>Risk of bias arising from the randomisation process</td><td colspan="2">Low risk</td><td colspan="2">Computer algorithm randomised participants, using a variety of</td></tr>
</table>

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**		
Study name	Alive-PD		
			parameters for stratification
	Allocation concealment	Low risk	Due to the nature of the intervention participants could not be blinded. However, outcome assessors were blinded.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	Both groups were informed that they were prediabetic as part of study enrolment, therefore motivation to adhere and seek support for to dietary and lifestyle changes may have been higher than it would have been otherwise in the control group.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Adherence to the intervention was reasonable (70% still interacting with the intervention after 6 months)
	Missing outcome data	Low risk	Adherence was reasonable and intention to treat analysis used.
	Risk of bias in measurement of the outcome	High risk	Some outcomes reported were objective and measured by a blinded outcome assessor. However, physical activity levels and diet were reported by self-report, and participants knew which group they belonged to, making bias in self-reporting more likely.
	Risk of bias in selection of the reported result	Low risk	No selective reporting bias detected.

Bibliographic reference/s	**Block G, Azar KM, Romanelli RJ, Block TJ, Hopkins D, Carpenter HA, Dolginsky MS, Hudes ML, Palaniappan LP, and Block CH (2015) Diabetes Prevention and Weight Loss with a Fully Automated Behavioral Intervention by Email, Web, and Mobile Phone: A Randomized Controlled Trial Among Persons with Prediabetes. Journal of medical Internet research 17(10), e240** **Block G, Azar KMJ, Romanelli RJ, Block TJ, Palaniappan LP, Dolginsky M, and Block CH (2016) Improving diet, activity and wellness in adults at risk of diabetes: randomized controlled trial. Nutrition & diabetes 6(9), e231**		
Study name	Alive-PD		
	Other sources of bias	High risk	'Modest monetary rewards were awarded for interaction'. However, there is no further description of the extent of this rewards system for the intervention group and whether this was also offered to the control group.
	Overall Risk of Bias	High	
Source of funding	National Institute of Nursing Research of the National Institutes of Health under Award Number R44NR012617		
Comments	-		
Additional references	Exclusion criteria obtained from linked publication: Block G, Azar KM, Block TJ, et al. A Fully Automated Diabetes Prevention Program, Alive-PD: Program Design and Randomized Controlled Trial Protocol. *JMIR Res Protoc*. 2015;4(1):e3. Published 2015 Jan 21. doi:10.2196/resprot.4046		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief		
	Comparison of outcomes		
	Comparison of behaviour		
	Identity		
	Shaping knowledge		
	Regulation		

Bossen et al. 2013

Bibliographic reference/s	**Bossen D, Veenhof C, Van Beek KE, Spreeuwenberg PM, Dekker J, De Bakker DH (2013) Effectiveness of a web-based physical activity intervention in patients with knee and/or hip osteoarthritis: randomized controlled trial. Journal of medical Internet research 15(11), e257**		
Study name	Join2move		
Registration	The Netherlands National Trial Register: NTR2483		
Study type	RCT		
Study dates	Enrolment started on 03/01/11 and ended 05/11/11, with continuous recruitment and data collection.		
Objective	To determine the short (3 months) and long term (12 months) effectiveness of the Join2move intervention in patients with knee and/or hip osteoarthritis in physical activity, physical function and self-perceived effect.		
Country/ Setting	The Netherlands		
Number of participants / clusters	200 participants were needed in total to detect a small to medium effect (0.2-0.5) in the outcome measure physical functional and self-perceived effect.		
Attrition	Of 278 eligible participants, 200 consented and 99 and 100 participants were allocated to control and intervention groups respectively. Questionnaire response rate was 75.4% (150/199) at 12-months.		
Participant /community characteristics.		**Intervention, n=100**	**Control n=99**
	Age (years), mean (SD)	61 (5.9)	63 (5.4)
	Gender (% male)	40 (40.0)	69 (69.7)
	BMI (kg/m^2)	27.6 (4.6)	27.5 (4.5)
	Location OA, n (%)		
	-Knee	67 (67.0)	60 (60.0)
	-Hip	21 (21.0)	20 (20.2)
	-Both	12 (12.0)	19 (19.2)
	Duration of symptoms, n (%)		
	- ≤ 1 year	12 (12.0)	6 (6.1)
	- >1-3 years	28 (28.0)	27 (27.3)
	- 3-7 years	27 (27.0)	27 (27.3)
	- ≥ 7 years	33 (33.0)	39 (39.4)
	Education, n (%)		
	-Low	13 (13.0)	15 (15.2)
	-Middle	36 (36.0)	43 (43.4)

Bibliographic reference/s	**Bossen D, Veenhof C, Van Beek KE, Spreeuwenberg PM, Dekker J, De Bakker DH (2013) Effectiveness of a web-based physical activity intervention in patients with knee and/or hip osteoarthritis: randomized controlled trial. Journal of medical Internet research 15(11), e257**		
Study name	Join2move		
	-High	51 (51.0)	40 (40.4)
	Comorbidity, n (%)		
	-None	65 (65.0)	60 (60.6)
	-1	19 (19.0)	16 (16.2)
	-2 or more	16 (16.0)	23 (23.2)
Method of allocation	Participants recruited through advertisements in newspapers and online on health-related websites. Interested people were directed to complete and online eligibility questionnaire. Participants were randomly assigned to the intervention or control group in a 1:1 ratio. Allocation provided by an independent researcher not involved in data collection through sequentially numbered opaque sealed envelopes. Assignment was revealed to participants through email.		
Inclusion criteria	Inclusion criteria included: aged 50-75 years; self-reported osteoarthritis in knee and/or hip (self-reported OA was determined by asking participants if they had a painful knee or hip joint and if a doctor or other health care provider had ever told them this was a result of OA); self-reported inactivity (<30 minutes of moderate PA 3 to 5 times or less per week); no face-to-face consultation for osteoarthritis with a health care provider other than a GP in the last 6 months; ability to access the internet weekly; no contra-indications to exercise without supervision (determined through PA-readiness questionnaire).		
Exclusion criteria	None reported		
Intervention	**TIDieR Checklist criteria**	**Details**	
	Brief Name	Behaviour graded activity	
	Rationale/theory/Goal	Based on behaviour graded activity (BGA) treatment exercise regimen, based on operant behaviour principles, stimulating people to gradually increase their daily life activities for fixed time periods.	
	Materials used **Procedures used**	BGA included a baseline test, goal setting and time-contingent PA objectives and text messages to promote PA. BGA includes positive reinforcement of gradual PA despite the presence of pain. Using the online web-based platform, each participant is encouraged to choose their favourite recreational activity which is gradually increased in a time-consistent way. In week 1, the user selected a central activity (e.g. walking, cycling, gardening), performed a 3-day self-test and determined a short-term goal for the next 8 weeks. Each week, a new online module was published, and at the end of the week users evaluated their pain and performance.	

Bibliographic reference/s	**Bossen D, Veenhof C, Van Beek KE, Spreeuwenberg PM, Dekker J, De Bakker DH (2013) Effectiveness of a web-based physical activity intervention in patients with knee and/or hip osteoarthritis: randomized controlled trial. Journal of medical Internet research 15(11), e257**	
Study name	Join2move	
		Information about osteoarthritis, lifestyle and videos were also provided. Automatic emails were sent if there was no login for 2 weeks to encourage use. A motivational message was presented at the end of the program. Waiting list control: Control participants received a letter with information about the study, physical activity and osteoarthritis. There was no contact between participants in the control group and the intervention group.
	Provider	Online
	Digital platform	Online
	Location	Online
	Duration	9-week program
	Intensity	Varies according to each participant, is self-paced. There were a total of 9 weekly modules available.
	Tailoring/adaptation	Intensity pre-determined by participants, through test performances at baseline and short-term goals selected, which generates 8 tailored weekly modules. Every week, evaluations are completed which generates text-based messages. Each participant was able to repeat or modify the modules each week depending on the reason they did not complete it, if applicable.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	3 and 12 months	
Data collection	Baseline data was collected through an online questionnaire. At 3 and 12 months, all participants received online questionnaires. Email and telephone reminders were used when participants failed to complete their online questionnaires within 2 weeks. Program usage was measured by the number of weekly modules completed, through automated records. Adequate program use was determined as completing 6 of 9 modules. Physical activity was measured by the validated PA Scale for Elderly questionnaire, consisting of questions on household, leisure time and work-related activities. The activities (assigned according to the level of intensity: light, moderate, and strenuous) are recorded as never, seldom (1-2 days/week), sometimes (3-4 days/week), or often (5-7 days/week). Amount of time spent on each activity is multiplied by its intensity.	

Bibliographic reference/s	**Bossen D, Veenhof C, Van Beek KE, Spreeuwenberg PM, Dekker J, De Bakker DH (2013) Effectiveness of a web-based physical activity intervention in patients with knee and/or hip osteoarthritis: randomized controlled trial. Journal of medical Internet research 15(11), e257**					
Study name	Join2move					
	A random subgroup from both groups (n=83) also received and returned an accelerometer by post, and these participants were also asked to fill in a short activity diary, documenting wearing time and reasons for removal. Participants with at least 10 hours of PA data for at least 4 valid days were included for further analysis. PA thresholds used were: 0-99 counts for sedentary activities, 100-1951 for light PA, 1952-5724 moderate PA, 5725-9498 for vigorous PA, and 9499-max for very vigorous activities. The total time spent in light, moderate, and (very) vigorous PA was summed and subsequently divided by the number of days worn to compute the daily average time spent in total activity. Physical function was determined by a subscale of the Knee Osteoarthritis Outcome Score and Hip Injury Osteoarthritis Outcome Score, which are self-administered questionnaires. Self-perceived effect was measured by a single question that asked about the degree of change since the previous assessment, on a7 point Likert scale					
Critical outcomes measures and effect size		**n**	**Intervention, mean (95% CI)**	**n**	**Control, mean (95% CI)**	**Mean difference (95% CI)**
	Total PA (PASE 0-400)					
	-baseline	100	163 (130 to 196)	97	160 (123 to 197)	-
	-12 months	74	174 (150 to 198)	71	153 (125 to 181)	21.2 (3.6 to 38.9)
	Total PA (accelerometer min/day)					
	-baseline	39	369 (299 to 439)	40	395 (322 to 468)	-
	-12 months	24	361 (317 to 406)	28	338 (291 to 384)	24 (0.5 to 46.8)
	Physical functioning (0-100)					
	-baseline	99	58.8 (51.5 to 66.0)	98	55.2 (47.9 to 62.5)	-
	-12 months	75	67.9 (59.1 to 76.7)	72	62.9 (54.1 to 71.7)	5.0 (-1.0 to 11.0)
		n	**Intervention, n (%)**	**n**	**Control, n (%)**	**Odds ratio (95% CI)**
	Self-perceived effect improved at 12 months	76	34 (34)	74	27 (27.3)	1.2 (0.6 to 2.4)

Bibliographic reference/s	**Bossen D, Veenhof C, Van Beek KE, Spreeuwenberg PM, Dekker J, De Bakker DH (2013) Effectiveness of a web-based physical activity intervention in patients with knee and/or hip osteoarthritis: randomized controlled trial. Journal of medical Internet research 15(11), e257**		
Study name	Join2move		
	Per-protocol analysis: More people in the intervention group reported self-perceived effects (no data presented). Module completion rate ranged from 80% in the first module to 40%. 94% of participants in the intervention group started the first module. 19.0% of participants fulfilled all modules and 46.0% reached the threshold of adherence (6/9 modules completed). Non-adherence was higher in the subgroup of people with co-morbidity (25/35; 71%) compared with no co-morbidity (29/65; 45%).		
Important outcomes measures and effect size	Adverse events such as extreme pain and injuries were not reported during the intervention.		
Statistical Analysis	Statistical power of 0.8 and statistical significance of p=0.05 were used. Intention to treat analysis was used, with complimentary per protocol analysis. T-tests and chi-squared tests used to compare baseline characteristics in the intervention and control group. Between group effect sizes were calculated according to Cohen's d.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	An independent researcher randomised participants using sequentially numbered opaque envelopes
	Allocation concealment	Some concerns	Participants could not be blinded due to nature of the intervention
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	No evidence of contamination of the intervention or control group
	Risk of bias due to deviations from intended interventions (adherence)	Some concerns	There was relatively low adherence to the intervention (46% reached adherence threshold of 66% completion)
	Missing outcome data	High risk	Risk of bias due to selective attrition

Bibliographic reference/s	**Bossen D, Veenhof C, Van Beek KE, Spreeuwenberg PM, Dekker J, De Bakker DH (2013) Effectiveness of a web-based physical activity intervention in patients with knee and/or hip osteoarthritis: randomized controlled trial. Journal of medical Internet research 15(11), e257**		
Study name	Join2move		
			investigated in analysis of baseline variables between responders and non-responders.
	Risk of bias in measurement of the outcome	High risk	Participants were not blinded to intervention group and mostly self-reported, subjective outcomes were used as follow-up assessment.
	Risk of bias in selection of the reported result	Low risk	No evidence of reporting bias
	Other sources of bias	Low risk	None identified
	Overall Risk of Bias	High risk	
Source of funding	Not reported		
Comments	Outcomes for 3 months follow up not reported as this does not answer review question.		
Additional references	-		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution	X	
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning	X	
	Social support		
	Self-belief		
	Comparison of outcomes		
	Comparison of behaviour		
	Identity		
	Shaping knowledge		
	Regulation		

Cameron et al 2015

Bibliographic reference/s	**Cameron D, Epton T, Norman P, Sheeran P, Harris P R, Webb T L, Julious S A, Brennan A, Thomas C, Petroczi A, and et al (2015) A theory-based online health behaviour intervention for new university students (U@Uni: lifeGuide): results from a repeat randomized controlled trial. Trials 16, 555**		
Study name	A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial		
Registration	Current Controlled Trials ISRCTN07407344.		
Study type	RCT, adults		
Study dates	Three weeks before starting university (in September 2013),		
Objective	The purpose of this four-week, personal activity monitor-based intervention program was to reduce sedentary behaviour and increase physical activity levels in daily living for sedentary adults		
Country/ Setting	Brisbane, Australia		
Number of participants / clusters	Allocated: (N = 2,621; mean age = 18.80 years; 55 % women) Intervention (n = 1,346) Control (n = 1,275) Subjects had no chronic conditions		
Attrition	Lost to 6-month follow up: Intervention (n= 835), Control (n=689)		
Participant /community characteristics.		Intervention, mean	Control, mean
	Female	55.81	54.87
	Male	44.19	45.13
	Age	18.73	18.89
Method of allocation	Participants completed the baseline questionnaire and were randomly allocated to the intervention (n = 1,346) and control (n = 1,275) conditions using the random function on LifeGuide. Control was no intervention.		
Inclusion criteria	Only those who reported a high total sitting time, defined as spending > 7 hours per day were invited to participate in the study. Pre-screening using a self-report questionnaire was used to determine eligibility in relation to sedentary behaviour.		
Exclusion criteria	None		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name		
	Rationale/theory/Goal		
	Materials used		
	Procedures used	After completing a self-affirmation manipulation, participants were directed to complete short modules on each of the four targeted health behaviours. Theory-based	

Bibliographic reference/s	**Cameron D, Epton T, Norman P, Sheeran P, Harris P R, Webb T L, Julious S A, Brennan A, Thomas C, Petroczi A, and et al (2015) A theory-based online health behaviour intervention for new university students (U@Uni: lifeGuide): results from a repeat randomized controlled trial. Trials 16, 555**	
Study name	A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial	
		messages were developed to encourage adequate fruit and vegetable intake and regular exercise, and to discourage binge drinking and smoking. Theory-based messages included text, videos of students talking about the targeted belief, and links to other related material. After viewing the page, participants had the opportunity to either view another topic or message or proceed to the planner. The planner helped participants to form implementation intentions by asking them to identify (i) a good opportunity to act on their intentions (e.g., when they have spare time between lectures) and (ii) a suitable response to their identified opportunity (e.g., to go swimming in the university pool) for each of the four targeted health behaviours.
	Provider	
	Digital platform	Computer tailored programme
	Location	
	Duration	When participants had finished Module 1, they were presented with the first page of Module 2 ('Eating fruit and vegetables') and instructed to work through the modules in numbered order. When all four modules had been completed, participants had access to the full website, containing messages targeting all the key beliefs from the formative research, links to the planner, saved plans and general health information.
	Intensity	
	Tailoring/adaptation	
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc
	Other details	N/A
Follow up	6 months	
Data collection	Fruit and vegetable intake (portions per day) was measured using a two-item dietary questionnaire, which had been validated against biochemical measures. Participants were asked to report the amount of fruit and vegetables consumed in a typical day. The Short Form of International Physical Activity Questionnaire was used to assess levels of physical activity. Participants were asked to indicate how many	

<table>
<tr><td>Bibliographic reference/s</td><td colspan="5">Cameron D, Epton T, Norman P, Sheeran P, Harris P R, Webb T L, Julious S A, Brennan A, Thomas C, Petroczi A, and et al (2015) A theory-based online health behaviour intervention for new university students (U@Uni: lifeGuide): results from a repeat randomized controlled trial. Trials 16, 555</td></tr>
<tr><td>Study name</td><td colspan="5">A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial</td></tr>
<tr><td></td><td colspan="5">times, and for how long, they had engaged in vigorous exercise (defined as ‘activities that take hard physical effort and make you breathe much harder than normal’), moderate exercise (defined as ‘activities that take moderate physical effort and make you breathe somewhat harder than normal’) and walking in the previous 7 days. Responses were converted into ‘metabolic equivalents of task’, to provide a total score representing the total amount of physical activity over the 7 days.

Engagement with the intervention was measured by identifying whether or not participants (i) completed the self-affirmation task (i.e., profile page), (ii) viewed the
theory-based messages in the four modules and (iii) formed implementation intentions for the four health behaviours.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="5">Estimated marginal means, sample sizes, standard deviations at 6 months follow up:

<table>
<tr><td></td><td colspan="2">Intervention (mean, SD)</td><td colspan="2">Control (mean, SD)</td></tr>
<tr><td></td><td>Baseline (n=1344)</td><td>6 months (n=690)</td><td>Baseline (n=1267)</td><td>6 months (n=793)</td></tr>
<tr><td>F&V intake (portions per day)</td><td>4.49 (2.34)</td><td>4.11 (1.84)</td><td>4.48 (2.21)</td><td>3.89 (1.97)</td></tr>
<tr><td></td><td>Baseline (n=1343)</td><td>6 months (n=671)</td><td>Baseline (n=1273)</td><td>6 months (n=788)</td></tr>
<tr><td>PA (met equivalent of task per week)</td><td>3510.02 (3276.63)</td><td>3627.94 (2578.97)</td><td>3665.30 (3518.61)</td><td>3613.27 (2578.07)</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="5">Engagement:
Of the 1,346 participants allocated to the intervention condition, 1,149 (85 %) completed the self-affirmation task. Considering engagement with the health messages, 973 participants (72 %) viewed a message for at least one behaviour, 672 (50 %) for at least two behaviours, 640 (48 %) for at least three behaviours, and 630 (47 %) for all four behaviours. Considering engagement with the planning tasks, 554 participants (41 %) formed an implementation intention for at least one behaviour, 479 (36 %) for at least two behaviours, 439 (33 %) for at least three behaviours, and 395 (29 %) for all four behaviours.</td></tr>
<tr><td>Statistical Analysis</td><td colspan="5">What analysis was used? Factors adjusted for in results reported above should be noted. Intention to treat analysis or other?</td></tr>
<tr><td></td><td colspan="2">Outcome</td><td>Judgement (Low / High /</td><td colspan="2">Comments</td></tr>
</table>

Bibliographic reference/s	**Cameron D, Epton T, Norman P, Sheeran P, Harris P R, Webb T L, Julious S A, Brennan A, Thomas C, Petroczi A, and et al (2015) A theory-based online health behaviour intervention for new university students (U@Uni: lifeGuide): results from a repeat randomized controlled trial. Trials 16, 555**		
Study name	A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial		
Risk of bias (ROB)		**some concerns)**	
Overall ROB	Risk of bias arising from the randomisation process	Some concerns	Randomisation present. No information on concealment. No significant differences between participants in the intervention and control conditions on any of the baseline measures.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	No information on blinding or deviations from intended interventions
	Risk of bias due to deviations from intended interventions (adherence)	High	Examining attrition after baseline revealed that participants who completed at least one follow-up questionnaire differed from those who did not complete a follow-up questionnaire in nationality, and baseline intentions to consume fruit and vegetables. Completers were more likely to be British, white and female, with a higher BMI and weaker intention to consume fruit and vegetables, than those who did not complete a follow-up questionnaire. In addition, there was a significant difference in drop-out rates between the two conditions.
	Missing outcome data	High	The effect of the intervention on the primary outcomes was assessed using an intention-to-treat approach in which missing data at 6-months were imputed from the 1-

Bibliographic reference/s	**Cameron D, Epton T, Norman P, Sheeran P, Harris P R, Webb T L, Julious S A, Brennan A, Thomas C, Petroczi A, and et al (2015) A theory-based online health behaviour intervention for new university students (U@Uni: lifeGuide): results from a repeat randomized controlled trial. Trials 16, 555**		
Study name	A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial		
			month follow-up data by carrying the last observation forward. This assumes that students' health behaviour would have remained stable from 1- to 6-month follow up.
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome measure may be affected by knowledge of intervention received (no information on blinding).
	Risk of bias in selection of the reported result	Low risk	Data does not appear to be reported based on results.
	Overall risk of Bias	High	
	Other outcome details:	N/A	
Source of funding			
Comments	No clear inclusion/exclusion criteria		
Additional references	Any other publications which have contributed evidence to this data extraction for the study		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		
	Comparison of behaviour		

Carter et al 2013

Bibliographic reference/s	**Carter MC, Burley VJ, Nykjaer C, and Cade JE (2013) Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. Journal of medical Internet research 15(4), e32**
Study name	Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomised controlled trial
Registration	
Study type	RCT
Study dates	Recruitment between March and May 2011
Objective	To collect acceptability and feasibility outcomes of a self-monitoring weight management intervention delivered by a smartphone app, compared to a website and paper diary in people overweight or obese. With a view to informing a larger trial.
Country/ Setting	UK, recruited from large employers by advertising through email, intranet, posters and newsletters
Number of participants / clusters	N=128, overweight, recruited from large employers in Leeds BMI ≥27.0 kg/m^2
Attrition	N=94 (73.4%) at 6wk follow-up N=79 (61.7%) at 6mth follow-up 38% attrition overall Compared with trail completers, non-completers had statistically significantly greater BMI and body fat and more completers reported health status as good or excellent Trial drop out had sig difference among the groups (p=0.001), not attending follow – up; N=3 (smartphone); N=23 (diary); N=23 (website)
Participant /community characteristics	No stat sig differences between groups at baseline in gender, age, BMI. Mean age 42(SD 9) Mean BMI 34kg/m^2 (SD 5), 77% (N=98) classified as obese (BMI ≥30kg/m^2) N=43 (smartphone), N=43 (website), N=43 (paper diary)

	Smartphone, N=43	Diary, N=43	Website, N=42
Age, mean (SD)	41.2 (8.5)	42.5 (8.3)	41.9 (10.6)
Weight, mean (SD)	96.4 (16.0)	97.9 (18.7)	96.4 (19.9)
BMI, mean (SD)	33.7 (4.2)	34.5 (5.7)	34.5 (5.6)
Body fat %, mean (SD)	35.9 (3.8)	35.9 (4.8)	36.2 (3.9)
Female%, N (%)	33 (76.7)	33 (76.7)	33 (78.6)

Method of allocation	3-arms, randomisation by a process of minimisation (to provide similar balanced groups in small samples) via software package, pilot study
Inclusion criteria	BMI ≥27.0 kg/m^2 (this value chosen to ensure that participants had a reasonable amount to lose in 6mths before maintenance of weight loss – also so that they would be unlikely to lose so much that they fell below a health BMI as the app is used without supervision) , 18-65yrs, not pregnant/breast feeding/planning a

Bibliographic reference/s	**Carter MC, Burley VJ, Nykjaer C, and Cade JE (2013) Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. Journal of medical Internet research 15(4), e32**		
Study name	Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomised controlled trial		
	pregnancy, not taking anti-obesity medication or medication/insulin for diabetes, no surgery for weight loss, not taking sertraline.		
Exclusion criteria	Not reported		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name		
	Rationale/theory/Goal	My Meal Mate (MMM) app benchmarked to produce an app of equivalent appearance and functionality as other apps available for general download. Key behavioural strategies of goal settings, self-monitoring and feedback underpin the MMM app.	
	Materials used	HTC Desire smartphone with the app pre-loaded	
	Procedures used	Participants instructed to use the study equipment every day for a week and then use it as much as they desired over the trail period. Smartphone group; Phone downloaded with MMM app, Website group; Voucher providing 6mths access to a Weight Loss Resources website Paper food diary group; Paper food diary, calorie-counting book and a calculator	
	Provider	Phone downloaded with MMM app	
	Digital platform		
	Location	Leeds	
	Duration	6months	
	Intensity	MMM allows detailed self-monitoring (of diet, physical activity and weight) and feedback via text message. Has been benchmarked against commercially available systems and contains a large, detailed UK-branded food database.	
	Tailoring/adaptation		
	Planned treatment fidelity		
	Actual treatment fidelity		

Bibliographic reference/s	**Carter MC, Burley VJ, Nykjaer C, and Cade JE (2013) Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. Journal of medical Internet research 15(4), e32**
Study name	Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomised controlled trial
	Other details
Follow up	6mths
Data collection	6wks and 6mths
Critical outcomes measures and effect size. (time points)	Weight, BMI, body fat In the ITT analysis, mean weight change; - Smartphone (-4.6kg, CI -6.2 to -3.0) - Diary group (-2.9kg CI -4.7 to -1.1) - Website group (-1.3kg, CI -2.7 to 0.1) - Between groups at 6mths, p=0.004 ITT analysis, BMI change; - Smartphone (-1.6kg/m^2, CI -2.2 to -1.1) - Diary group (-1.0kg/m^2, CI -1.6 to -0.4) - Website group (-0.5kg/m^2, CI -0.9 to 0.0) ITT analysis, body fat change; - Smartphone (-1.3%, CI -1.7 to -0.8) - Diary group (-0.9%, CI -1.5 to -0.4) - Website group (-0.5%, CI -0.9 to 0.0) NS differences in follow-up weight between the groups at 6mths, or in difference over time. Similar trend for BMI and body fat.

	Smartphone, mean (95%CI)	Diary, mean (95%CI)	Website, mean (95%CI)	P value
Weight, baseline, kg	96.8 (91.9-101.9)	97.9 (92.2-103.6)	96.4 (90.2-102.6)	
Weight, 6wks, kg	93.9 (89.0-99.0)	95.9 (89.8-101.7)	95.1 (89.0-101.2)	0.001
Weight, 6mths, kg	92.2 (87.0-97.4)	95.0 (89.0-101.0)	95.1 (89.0-101.3)	<0.001
BMI, baseline, kg/m^2	33.7 (32.4-35.0)	34.5 (32.7-36.2)	34.5 (32.7-36.2)	
BMI, 6wks, kg/m^2	32.6 (31.3-33.9)	33.7 (31.9-35.5)	34.0 (32.3-35.8)	<0.001
BMI, 6mths, kg/m^2	32.1 (30.7-33.5)	33.4 (31.5-35.4)	34.0 (32.3-35.8)	<0.001

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Carter MC, Burley VJ, Nykjaer C, and Cade JE (2013) Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. Journal of medical Internet research 15(4), e32</td></tr>
<tr><td>Study name</td><td colspan="2">Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomised controlled trial</td></tr>
<tr><td></td><td colspan="2">
<table>
<tr><td>Body fat, baseline, %</td><td>35.9 (34.7-37.1)</td><td>36.0 (34.5-37.5)</td><td>36.3 (35.1-37.5)</td><td></td></tr>
<tr><td>Body fat, 6wks, %</td><td>35.0 (33.7-36.2)</td><td>35.3 (33.8-36.9)</td><td>36.0 (34.7-37.2)</td><td>0.01</td></tr>
<tr><td>Body fat, 6mths, %</td><td>34.7 (33.5-35.9)</td><td>35.1 (33.4-36.7)</td><td>35.9 (34.5-37.2)</td><td>0.02</td></tr>
</table>

Subgroup analysis for study completers only, outcomes on satisfaction with equipment not extracted</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="2">Use
<table>
<tr><td>Intervention use</td><td>Smartphone, N=43</td><td>Diary, N=43</td><td>Website, N=42</td><td></td></tr>
<tr><td>6wks (42days), median (IQR)</td><td>36 (21-42)</td><td>29 (0-38)</td><td>15 (6-33)</td><td>P=0.004</td></tr>
<tr><td>Completing every day, N (%)</td><td>14 (33)</td><td>8 (19)</td><td>3 (7)</td><td></td></tr>
<tr><td>6mths (184days), median (IQR)</td><td>82 (28-172)</td><td>18 (0-37(</td><td>15 (7-45)</td><td>P<0.001</td></tr>
<tr><td>Completing every day, N (%)</td><td>7 (16)</td><td>0 (0)</td><td>0 (0)</td><td></td></tr>
<tr><td>Completing 0 days or not returning paper diary, N (%)</td><td>1 (2)</td><td>31 (78)</td><td>3 (7)</td><td></td></tr>
</table></td></tr>
<tr><td>Statistical Analysis</td><td colspan="2">Formal sample size calculation not appropriate, few published guidelines on sample size for pilot trials – trial aimed to recruit 135 sample size (pragmatic choice).
Not powered to detect change in anthropometric measures. ITT analysis used.
Regression analysis to test between groups differences adjusting for age, gender, starting BMI.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low</td><td>Randomisation present by computer. There were no statistically significant differences of baseline characteristics in the 3 intervention groups for the factors balanced at minimization:</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Carter MC, Burley VJ, Nykjaer C, and Cade JE (2013) Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. Journal of medical Internet research 15(4), e32**		
Study name	Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomised controlled trial		
	Risk of bias due to deviations from intended interventions (assignment)	Low	Authors noted not possible due to nature of intervention
	Risk of bias due to deviations from intended interventions (adherence)	Some concerns	In terms of trial retention, 94 (73.4%) people returned for 6-week follow-up measurements and 79 (61.7%) returned at 6 months
	Missing outcome data	High	The pilot trial suffered from 38% attrition overall, attrition was not equal among the groups
	Risk of bias in measurement of the outcome	Some concerns	None blinding may have resulted in some bias of results.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	High	
	Other outcome details:	N/A	
Source of funding	Funded by a National Prevention Research initiative grant		
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		X

Bibliographic reference/s	**Carter MC, Burley VJ, Nykjaer C, and Cade JE (2013) Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. Journal of medical Internet research 15(4), e32**	
Study name	Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomised controlled trial	
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Chen et al 2011

Bibliographic reference/s	**Chen JL, Weiss S, Heyman MB, Cooper B, and Lustig RH (2011) The efficacy of the web-based childhood obesity prevention program in Chinese American adolescents (Web ABC study). Journal of Adolescent Health 49(2), 148-154**		
Study name	The Efficacy of the Web-Based Childhood Obesity Prevention Program in Chinese American Adolescents (Web ABC Study)		
Registration	Not reported		
Study type	RCT, 12-15-year olds		
Study dates	Data were collected from October 2007 to May 2009		
Objective	To examine the feasibility and efficacy of a theory-driven and family-based program delivered online to promote healthy lifestyles and weights in Chinese American adolescents		
Country/ Setting	Convenience sampling was used to recruit participants from community programs in the San Francisco Bay area.		
Number of participants / clusters	Randomized controlled study of a Web-based intervention was developed and conducted in 54 Chinese American adolescents (ages, 12–15 years) and their families. Data on anthropometry, blood pressure, dietary intake, physical activity, and knowledge and self-efficacy regarding physical activity and nutrition were collected at baseline and 2, 6, and 8 months after the baseline assessment.		
Attrition	Initially, 63 adolescents and their families agreed to participate in the study; however, 9 children and their families never logged on to the Web site, leaving a total of 54 families. The intervention group had 16 boys (59%) and the control group had 13 boys (48%) (X2 = 0.67, p = .59). No detail on numbers of family members in each group.		
Participant /community characteristics.	Gender = all boys	Intervention (n=16)	Control (n=13)
	Overweight/obese	10	9
	Mean age	12.52 (SD, 3.15) years	
	Mean maternal age	41.65 (SD, 3.49) years	

Bibliographic reference/s	**Chen JL, Weiss S, Heyman MB, Cooper B, and Lustig RH (2011) The efficacy of the web-based childhood obesity prevention program in Chinese American adolescents (Web ABC study). Journal of Adolescent Health 49(2), 148-154**		
Study name	The Efficacy of the Web-Based Childhood Obesity Prevention Program in Chinese American Adolescents (Web ABC Study)		
	Average weekly log on rate	71.8% (5.74 sessions)	71.3% (5.7 sessions)
Method of allocation	subjects were randomly assigned to the intervention group or the control group on the basis of a computer-generated random number assignment		
Inclusion criteria	Inclusion criteria for this study included: (1) adolescents who were 12 to 15 years old and were normal weight or overweight based on CDC's recommendation; (2) self-identified ethnicity as Chinese or of Chinese origin by both subject and parent, and they must reside in the same household; (3) the adolescent had to be able to speak and read English; (4) The adolescent had to report being in good health, defined as free of an acute or life-threatening disease; and (5) parents must have been able to speak English, Mandarin, or Cantonese and read English or Chinese.		
Exclusion criteria	Not reported		
Intervention	**TIDieR Checklist criteria**	**Details**	
	Brief Name	Web-Based Active Balance Childhood (Web ABC) study	
	Rationale/theory/Goal	The intervention is based on the Transtheoretical Model–Stages of Change and the social cognitive theory. This intervention was designed to be individually tailored to the behavioural stage of the adolescent.	
	Materials used		
	Procedures used	The Web-based program consists of activities to enhance adolescents' self-efficacy and facilitated their understanding and use of problem-solving skills related to nutrition, physical activity, and coping. Information related to nutrition (e.g., Food Pyramid, the Big Three, Portion Size, and Meal Planning developed by the American Dietetic Association)] and healthy lifestyles (e.g., HeartPower developed by the American Heart Association) was modified and used as the curriculum for the intervention.	
	Provider	-	
	Digital platform	Computer tailored or untailored programme.	
	Location	Participants could logon to the program from home, library or community centre.	
	Duration	Each lesson lasted about 15 minutes.	
	Intensity		

Bibliographic reference/s	**Chen JL, Weiss S, Heyman MB, Cooper B, and Lustig RH (2011) The efficacy of the web-based childhood obesity prevention program in Chinese American adolescents (Web ABC study). Journal of Adolescent Health 49(2), 148-154**	
Study name	The Efficacy of the Web-Based Childhood Obesity Prevention Program in Chinese American Adolescents (Web ABC Study)	
	Tailoring/adaptation	Adolescents also used an interactive dietary preparation software program (The Wok) tailored to common Chinese foods that was developed by Joslin Diabetes Centre. Participants could develop a dish and checked on the nutritional information on The Wok program. In addition, participants learned to set up a realistic goal and plan each week to help improve their behaviours including food intake and physical activity. Information presented over the Internet included text, graphics, comics, and voice over. Physical activity was also included in the program, with the goal being to increase adolescents' energy expenditure. Subjects were encouraged to engage in different types of non-competitive activities (e.g., dance, brisk walking), learn types of activities that they can do during recess and at home, and learn alternatives to watching television. Each subject also received a pedometer and completed an online activity diary to monitor their activity levels. Adolescents could enter the average number of steps they took and the average number of servings of fruits and vegetables they had consumed on a daily basis on the Web site. These numbers were converted to two graphics that indicated the subject's progress. All information presented to the adolescents was in English. Participants in the control group also logged on to the Web site by using a pre-assigned username and password. Every week for 8 weeks, adolescents received general health information and not tailored, adapted from the American Academy of Pediatrics, the CDC, and the American Heart Association, related to nutrition, dental care, safety, common dermatology care, and risk-taking behaviours using similar format as the intervention group (text, graphics, comics, and voice over). Parents also received 3 Internet sessions related to general information on the topics taught in the control group.
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Chen JL, Weiss S, Heyman MB, Cooper B, and Lustig RH (2011) The efficacy of the web-based childhood obesity prevention program in Chinese American adolescents (Web ABC study). Journal of Adolescent Health 49(2), 148-154</td></tr>
<tr><td>Study name</td><td colspan="2">The Efficacy of the Web-Based Childhood Obesity Prevention Program in Chinese American Adolescents (Web ABC Study)</td></tr>
<tr><td></td><td>Other details</td><td>A family component (three internet sessions) that was adolescent-specific provides reinforcement and social support at home for the education received during the study. The internet sessions include sets of exercises to increase parents' knowledge and skills regarding healthy food preparation, discussion of issues related to dealing with adolescents' eating habits and problems, and tips about fun family/adolescent activities to improve dietary intake and physical activity. Parents were encouraged to involve their adolescents in shopping and meal preparation. Each lesson lasted about 15 minutes.</td></tr>
<tr><td>Follow up</td><td colspan="2">6 and 8 months extracted</td></tr>
<tr><td>Data collection</td><td colspan="2">Adolescents recorded all foods and beverages and serving sizes consumed for 3 days in a row. A 3-day food diary contains an instruction sheet, a sample completed day's food-record sheet, and eight blank white dietary record forms. Adolescents were instructed to record food and drink grouped into the following categories: breakfast, snack, lunch, snack, dinner, and snack. Kappa coefficients and percentage agreement for interobserver reliability ranged from 0.43 to 0.91</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Means and SD's for outcome variables:
<table>
<tr><td></td><td>Intervention</td><td>Control</td></tr>
<tr><td>F&V</td><td></td><td></td></tr>
<tr><td>Baseline</td><td>2.19 (0.48)</td><td>2.28 (0.61)</td></tr>
<tr><td>6 months</td><td>2.41 (0.64)</td><td>2.11 (0.55)</td></tr>
<tr><td>8 months</td><td>2.63 (0.71)</td><td>2.34 (0.66)</td></tr>
<tr><td>BMI</td><td></td><td></td></tr>
<tr><td>Baseline</td><td>20.79 (3.12)</td><td>20.25 (3.21)</td></tr>
<tr><td>8 months</td><td>20.76 (3.08)</td><td>20.21 (3.13)</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="2">N/A</td></tr>
<tr><td>Statistical Analysis</td><td colspan="2">N/A</td></tr>
</table>

Bibliographic reference/s	**Chen JL, Weiss S, Heyman MB, Cooper B, and Lustig RH (2011) The efficacy of the web-based childhood obesity prevention program in Chinese American adolescents (Web ABC study). Journal of Adolescent Health 49(2), 148-154**		
Study name	The Efficacy of the Web-Based Childhood Obesity Prevention Program in Chinese American Adolescents (Web ABC Study)		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Some concerns	Randomisation present. No information on concealment. No difference in baseline variables and logon rate between the groups.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	No information on blinding or deviations from intended interventions
	Risk of bias due to deviations from intended interventions (adherence)	Low	High retention rates throughout the intervention period.
	Missing outcome data	Low	Fifty children and their families (93%) completed baseline and all follow-up measures. No significant differences were found in baseline variables between adolescents who provided follow-up data and adolescents who were lost to follow-up.
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no information on blinding).
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns.	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	N/A		
Behaviour change techniques (16	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		

Bibliographic reference/s	**Chen JL, Weiss S, Heyman MB, Cooper B, and Lustig RH (2011) The efficacy of the web-based childhood obesity prevention program in Chinese American adolescents (Web ABC study). Journal of Adolescent Health 49(2), 148-154**	
Study name	The Efficacy of the Web-Based Childhood Obesity Prevention Program in Chinese American Adolescents (Web ABC Study)	
theoretical clusters)	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	X
	Self-belief	X
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Chen et al 2017/2019

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study
Registration	Clinicaltrials.gov NCT 01693250
Study type	RCT, adolescents 13-18 years
Study dates	
Objective	To measure effects of an innovative mobile phone technology-based intervention for overweight and obese adolescents and to examine the intervention's feasibility for use in primary care clinics
Country/ Setting	USA, primary care providers at two large community clinics (predominantly Chinese American), invitation letter to families of overweight and obese adolescents.
Number of participants / clusters	N=40, overweight or obese adolescents, 23 boys (58%) and 17 girls (42%).
Attrition	Retention rate at 6mth follow-up visit; 90% (mobile phone-based intervention), 87% (control group)

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**		
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study		
Participant /community characteristics	N=22 overweight, N=18 obese Mean age 14.9 (SD 1.7); Sex: 23 (58%) male Mean BMI 28.3 (SD 4.7) BMI percentile 94.0 (SD 3.7) At baseline the groups did not differ in gender, weight status, family annual income or any other variables N=23 (mobile phone-based intervention), N=17 (control group)		
Method of allocation	After the baseline assessment, the principal investigator randomly assigned eligible participants—40 overweight or obese adolescents—to either the mobile phone-based intervention group (n=23, 58%) or the control group (n=17, 42%) using a randomization table that was stratified by gender; the table was provided by an SPSS program.		
Inclusion criteria	13-18yrs, BMI ≥85th percentile (CDC growth chart) In good health, free of acute of life-threatening disease		
Exclusion criteria	Not reported		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name		
	Rationale/theory/Goal	Design and execution of mobile phone-based intervention informed by social cognitive theory (SCT) which holds that several key concepts such as self-efficacy, outcome expectation, skill mastery, and self-regulation capabilities are used to explain and predict behaviour.	
	Materials used	Mobile phone group – to wear the device and encouraged to use the app every day. Weekly message sent to remind them to use the device	
	Procedures used	Mobile phone-based intervention group: Adolescents in the mobile phone-based intervention group received a Fitbit Flex and downloaded an app and a link to the iStart Smart for Teens program to their mobile phone. Adolescents received in-person demonstrations and written instructions on how to access the	

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**	
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study	
		Fitbit data and the iStart Smart for Teens program via cellphone and website. Control group: control group participants were given an Omron HJ-105 pedometer and a blank food-and-activity diary and were asked to use the pedometer and diary for 3 months. Participants were asked to record and track physical activity, sedentary activity, and food intake in the diary. They also accessed an online program that consisted of eight modules related to general adolescent health issues, such as diet and nutrition, dental care, safety, common dermatology care, and risk-taking behaviours. Completion of each of the online program's modules required less than 10 minutes.
	Provider	
	Digital platform	Mobile phone & website
	Location	USA
	Duration	6mths
	Intensity	Fitbit Flex wristband that tracks steps, distance (running or walking), calories burned, mins in activity, mins in sleep. Users can record and track their dietary intake via Fitbit website or app. Can use a customised dashboard to analyse data daily and chart progress over time. iSmart Smart for Teens Program, 8 modules (could be completed in 10mins or less), online format of videos and animation narratives. Modules available via mobile phone and computer. Mobile phone-based participants received instruction on topically relevant activities via mobile phone or computer, supplementary general information and tips via app messages. Asked to complete one module/wk and the entire program within 3mths. Programme topics related to lifestyle modification, weight management and stress management. Following completion participants began an intervention phase of biweekly text messages to encourage and stabilise positive behaviour changes.

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**	
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study	
	Tailoring/adaptation	Users can record and track their dietary intake via Fitbit website or app. Can use a customised dashboard to analyse data daily and chart progress over time
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	75% mobile phone intervention group reported accessing Fitbit app or website several times a wk, 20% accessed the programme once a wk
Follow up	6 months	
Data collection	Adolescents completed online questionnaires regarding dietary intake, physical activity, and self-efficacy related to physical activity at baseline and at 3 months and 6 months after the baseline assessment adolescents' weight, height, waist and hip circumferences, and blood pressure were also measured by a trained research assistant at baseline, 3 months, and 6 months at the study sites. Parents provided demographic data regarding parental age, parental education level, and household income at baseline. Participants' BMI was determined by dividing body mass by height squared (kg/m^2). To estimate participants' level of physical activity, they were asked a question from the California Health Interview Survey (CHIS): "Over a typical week, on how many days are you physically active for at least 60 minutes total per day?" participant's stated number of days was used as the estimate for that participant. To estimate participants' level of sedentary activity, they were first asked to think about their free time during weekdays as well as weekends. They were then asked three CHIS questions: "On a typical day, about how many hours do you usually watch TV or play video games?" "About how many hours per day on Monday through Friday do you use a computer for fun, not schoolwork?" and "On a typical Saturday and Sunday, about how many hours per day do you usually watch TV or play video games?". The mean of the total number of hours spent daily in these sedentary activities was calculated as sedentary activity time. To assess participants' fruit and vegetable consumption, they were asked two CHIS questions: "Yesterday, how many servings of fruit, such as an apple or banana, did you eat?" Similarly, to assess sugary-sweetened drink consumption, participants were also asked, "Yesterday, how many glasses or cans of sweetened fruit drinks, sports, or energy drinks did you drink?"	
Critical outcomes measures	**Table 1. All outcome variables over the three time points (baseline and 6 months after baseline) by treatment and control groups (N=40):**	

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study
and effect size. (time points)	

	Intervention, mean (SD) (n=23)		**Control, mean (SD) (n=17)**	
	Baseline	**6 months**	**Baseline**	**6 months**
BMI	27.37 (3.26)	26.93 (3.43)	28.35 (4.36)	29.18 (3.88)
Veg/Fruit (serving/day)	3.0 (0.95)	3.76 (.83)	3.17 (1.24)	3.08 (0.79)
Soda drink (cup/day)	1.43 (0.90)	0.35 (0.49)	1.24 (0.97)	1.07 (0.76)
TV/Computer (hr/day)	3.22 (0.74)	2.43 (0.60)	3.51 (1.39)	3.42 (1.57)
PA (day/week)	2.36 (0.99)	3.09 (1.26)	2.29 (1.57)	2.25 (1.71)
Fast food consumption (times/week)	2.39 (0.39)	2.76 (0.34)	2.58 (0.33)	2.41 (0.25)
PQoL physical health	78.99 (14.79)	84.69 (13.99)	76.72 (13.86)	77.83 (19.35)
PQoL psychological health	81.20 (10.30)	89.18 (8.75)	78.13 (11.89)	80.07 (14.49)

Table 2. At 6mth follow-up, substantial improvement in BMI, diastolic BP, physical activity day/wk, and servings fruit and veg/day

Time x group	z	p	90%CI
BMI	-4.37	0.001	-0.84 to -0.40
SBP	-0.03	0.97	-1.45 to 1.51
DBP	-3.23	0.001	-4.02 to -1.31
Fruit/veg	2.74	0.006	0.21 to 0.83
Physical activity	2.58	0.01	0.15 to 0.66
Diet self-efficacy	5.05	<0.001	0.18 to 0.36
Physical activity self-efficacy	2.75	0.01	0.11 to 0.45

Table 3. Univariate regression analysis examining the relationship between each predictor and change in BMI

Predictor	**Model 1, β (95%CI)**	**Model 2, β (95%CI)**	**Model 3, β (95%CI)**

<table>
<tr><td>Bibliographic reference/s</td><td>Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12
Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449</td></tr>
<tr><td>Study name</td><td>Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study</td></tr>
<tr><td></td><td>
<table>
<tr><td>BMI</td><td>1.22 (0.72, 1.71)</td><td>-1.72 (.72, 1.71)</td><td>-1.57 (-2.19, -.94)</td></tr>
<tr><td>PA</td><td>0.14 (-0.15, 0.45)</td><td>0.39 (-0.44, 1.24)</td><td>-0.14 (-0.52, 0.24)</td></tr>
<tr><td>Sugar sweetened beverages</td><td>-0.11 (-0.31, 0.09)</td><td>0.07 (-0.36, 0.49)</td><td>-0.44 (-0.70, -0.17)</td></tr>
<tr><td>Fruit/veg portions</td><td>0.23 (-0.46, 0.94)</td><td>-0.26 (-1.50, 0.98)</td><td>0.24 (-0.66, 1.14)</td></tr>
<tr><td>TV/computer time</td><td>-0.04 (-0.26, 0.17)</td><td>-0.65 (-1.53, 0.22)</td><td>-0.51 (-0.78, -0.23)</td></tr>
<tr><td>Fast food</td><td>-0.32 (-12.12, 11.47)</td><td>4.68 (-14.03, 23.39)</td><td>0.70 (-14.1, 5.79)</td></tr>
<tr><td>PQoL physical health</td><td>1.48 (-1.36, 4.32)</td><td>2.33 (-5.49, 10.15)</td><td>3.11 (-0.52, 6.76)</td></tr>
<tr><td>PQoL psychosocial health</td><td>0.27 (-2.54, 3.10)</td><td>1.40 (-8.00, 10.82</td><td>2.72 (-0.88, 6.34)</td></tr>
</table>
Model 1 assesses the effect of time on outcome, model 2 the effect of the group assignment and model 3 the effect of group and time.
</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>N/A</td></tr>
<tr><td>Statistical Analysis</td><td>With 23 in the intervention group and 17 in the control, 80% chance of detecting a larger effect size (0.90) between the two groups at 5%level. As the purpose was to evaluate feasibility analysis focused on effect size.
Multilevel regression models, bootstrap to examine between-group differences at baseline, 3mths and 6mths.

Regression analysis to test between groups differences adjusting for age, gender, starting BMI.
Univariate regression analysis was used to examine the relationship between each predictor and change in BMI. In the multivariate regression model, the outcome variables were the changes of BMI and BMI z score (six months after baseline).</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low</td><td>Randomisation present. No information on concealment. No differences baseline</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**		
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study		
			variables between the groups.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	No information on blinding or deviations from intended interventions
	Risk of bias due to deviations from intended interventions (adherence)	Low	High retention rates throughout the intervention period.
	Missing outcome data	Low	The study retention rate at the 6-month follow-up visit was 90% (21/23) for the mobile phone-based intervention group and 87% (15/17) for the control group
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no information on blinding).
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns.	
	Other outcome details:	N/A	
Source of funding	Funded by an American Nurses Foundation Research grant and the National Center for Advancing Translational Sciences		
Comments			
Additional references			
Behaviour change	Scheduled consequences		
	Reward and threat		

Bibliographic reference/s	**Chen JL, Guedes CM, Cooper BA, and Lung AE (2017) Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. Interactive journal of medical research 6(2), e12** **Chen JL; Guedes CM; Lung AE. Smartphone-based Healthy Weight Management Intervention for Chinese American Adolescents: Short-term Efficacy and Factors Associated With Decreased Weight. The Journal of Adolescent Health. 2019 Apr;64(4):443-449**	
Study name	Short-term efficacy of an innovative mobile phone technology-based intervention for weight management for overweight and obese adolescents: pilot study	
techniques (16 theoretical clusters)	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Dale et al. 2015

Bibliographic reference/s	**Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified**
Study name	Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial
Registration	ACTRN 12613000901707
Study type	RCT
Study dates	Subjects recruited between 2013 and 2014
Objective	To investigate the effectiveness of a mHealth-delivered comprehensive CR program (Text4Heart) to improve adherence to recommended lifestyle behaviours (smoking cessation, physical activity, healthy diet, and nonharmful alcohol use) in addition to usual care in people with hypertension or CVD.
Country/ Setting	New Zealand (Auckland); 2 large metropolitan hospitals
Number of participants / clusters	Total number of participants – 291 recruited; 123 eligible A sample size of 60 per group estimated to provide 80% power at the 5% level of significance, to detect an absolute difference of 25% in the primary outcome of adherence to recommendations.

Bibliographic reference/s	**Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified**		
Study name	Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial		
Attrition	123 of 291 people screened were eligible and randomised to intervention or control; 122 of 123 participants randomised received the Text4Heart program.		
Participant /community characteristics.		**mHealth messaging group (n=61)**	**Control group (n=62)**
	Age (years), mean (SD)	59.0 (10.5)	59.9 (11.8)
	Gender (% male)	79	52
	New Zealand/ European (%)	75	45
	Income <50,000 NZ$/year (%)	23	17
	Cardiac diagnosis (%) - myocardial infarction - unstable angina - angina	 75 7 18	 84 8 8
Method of allocation	Participants were randomised to either intervention or control group in a 1-to-1 ratio and stratified according to smoking status. The randomisation sequence was computer generated by a statistician independent to the project using a block size of 6. Allocation was concealed in sequentially numbered, opaque, sealed envelopes.		
Inclusion criteria	Participants must be English-speaking adults with documented diagnosis of CHD myocardial infarction, angina or revascularisation. Access to the Internet was required.		
Exclusion criteria	Exclusion criteria included: those with untreated ventricular tachycardia, severe heart failure, life-threatening coexisting disease with life expectancy less than 1 year, and/or significant exercise limitations for reasons other than CHD		
Intervention	**TIDieR Checklist criteria**	**Details**	
	Brief Name		
	Rationale/theory/Goal	Messages framed by social cognition theory and self-efficacy.	
	Materials used	A theoretically framed comprehensive programme of evidence-based coronary rehabilitation guidelines was delivered by text message and a supporting website over 24 weeks. Messages addressed: • illness perceptions and medication-related beliefs (containing information on the value of taking their prescribed medication)	
	Procedures used		

Bibliographic reference/s	**Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified**	
Study name	Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial	
		• physical activity (information on the importance of being physically active, suggested activities and key strategies, such as goal-setting and self-monitoring; general exercise prescription was offered detailing the type, frequency, duration and intensity of exercise based on participants preferred activities – 150 minutes of moderate to vigorous intensity physical activity per week recommended) • heart healthy diet (messages promoting healthy eating strategies, overcoming barriers and advice on choosing healthy food and food preparation; eating 5 servings of fruit and vegetables per day; decreasing salt and saturated fat content) • stress management (education on relaxation techniques, coping strategies and avoiding harmful behaviours; messages focus on facilitating a return to a full and active life by enabling the development of their own resources) • smoking cessation (advice and support, including advice to avoid smoking triggers and symptoms to expect upon quitting) A pedometer was provided to participants to assist with self-monitoring of daily activity. The supporting website included additional information, biweekly tips via a participant blog, graphs displaying their pedometer step counts and short video messages from role models and medical professionals.
	Provider	Interventions delivered only by text message and website.
	Digital platform	Text message and a supporting website
	Location	-
	Duration	24 weeks
	Intensity	7 messages were received per week for 12 weeks, and 5 a week for week 13 to 24, with access to a supporting website
	Tailoring/adaptation	Messages are tailored according to each participants name, choice of suboptimal behaviour and the time of day messages are sent. Bidirectional messages were included that required the participant to respond (e.g. texting in pedometer step counts) triggering an automated tailored response.

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified</td></tr>
<tr><td>Study name</td><td colspan="2">Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial</td></tr>
<tr><td rowspan="4"></td><td></td><td>Participants were able to text to request personalised feedback, with questions answered in 48 hours.</td></tr>
<tr><td>Planned treatment fidelity</td><td>-</td></tr>
<tr><td>Actual treatment fidelity</td><td>52/61 (85%) of participants in the intervention group reported reading all text messages. 58/61 (95%) of participants sent in at least 1 step count text response (mean 15 [SD 8.7] step count text responses per participants over 24 weeks). 23/61 (38%) sent in text questions or comments.</td></tr>
<tr><td>Other details</td><td>All participants (intervention and control groups) received usual care, including inpatient rehabilitation and encouragement to attend centre-based cardiac rehabilitation (CR). CR included a 1-hour education program per week for 6 weeks at a hospital or community centre covering a range of topics such as cardiovascular risk factors, lifestyle change and psychosocial support. All participants were also encouraged to attend a 16-session supervised exercise program.
Participants were reimbursed for the cost of text messaging.</td></tr>
<tr><td>Follow up</td><td colspan="2">3 and 6 months (only 6-month follow up data has been extracted)</td></tr>
<tr><td>Data collection</td><td colspan="2">Baseline assessment was performed face-to-face in a hospital, a clinic or home setting with 4 weeks of hospital discharge.
Participants were telephones at 3-months post-randomisation to collect primary outcome data.
Participants were seen at a clinical or in a home setting for final follow-up assessment at 6-months.</td></tr>
<tr><td>Critical outcomes measures and effect size</td><td colspan="2">
<table>
<tr><th></th><th>mHealth messaging group at baseline (n=61)</th><th>Control group at baseline (n=62)</th><th>mHealth messaging group at 6-months (n=61)</th><th>Control group at 6-months (n=62)</th><th>Adjusted OR (95% CI); p value</th></tr>
<tr><td>Adherent to recommended lifestyle changes, n (%)</td><td>20 (33)</td><td>27 (17)</td><td>32 (53)</td><td>24 (39)</td><td>1.93, (0.83 to 4.53); p=0.13</td></tr>
<tr><td>Physically active, n (%)</td><td>17 (28)</td><td>7 (11)</td><td>19 (31)</td><td>15 (24)</td><td>1.4, (0.6 to 3.1)</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified**
Study name	Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial

≥5 F&V intake/day	12 (20)	15 (24)	29 (48)	15 (24)	2.8, (1.3 to 6.1)
	mHealth messaging group at baseline (n=61)	**Control group at baseline (n=62)**	**mHealth messaging group at 6-months (n=61)**	**Control group at 6-months (n=62)**	**Adjusted mean difference at 6-months (95% CI); p value**
BMI, mean (SD)	31.0 (6.4)	28 (4.2)	30.3 (5.4)	28.1 (4.4)	-0.10 (-0.56 to 0.35); 0.66
Waist-to-hip ratio, mean (SD)	0.98 (0.07)	0.95 (0.07)	0.97 (0.06)	0.94 (0.07)	0.01 (-0.01 to 0.02); 0.29
Blood pressure (mm Hg), mean (SD)					
- systolic	131 (17)	129 (26)	136 (20)	135 (16)	0.09 (-6.43 to 6.61); 0.98
- diastolic	78 (11)	75 (11)	79 (11)	79 (10)	-0.24 (-3.86 to 3.38); 0.90
Cholesterol (mmol/L), mean (SD)					
- total	4.6 (1.2)	4.3 (1.2)	3.6 (0.7)	3.8 (1.1)	-0.29 (-0.61 to 0.03); 0.08
- HDL	1.1 (0.3)	1.1 (0.3)	1.1 (0.3)	1.2 (0.4)	-0.04 (-0.15 to 0.07)
- LDL	2.7 (1.3)	2.4 (1.0)	1.7 (0.6)	1.9 (0.8)	-0.25 (-0.49 to 0.01)
CVD risk probability, mean (SD)	-	-	7.9 (3.4)	8.1 (3.3)	-0.27 (-1.58 to 1.04)

Important outcomes measures and effect size	There were 13 serious adverse events (intervention, n=8; control, n=5) reported during the trial, although none were study related. 46/61 (75%) of participants logged onto the website at least once during the intervention period. The number of visits to the website per person ranged from 0 to 100 (median 3) over the 6-month intervention period.

Bibliographic reference/s	**Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified**		
Study name	Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial		
Statistical Analysis	Treatment evaluations analysed by intention to treat, although missing data not imputed if the proportion of missing in the primary outcome was < 10%. Statistical tests all 2-sided, with 5% significance level. Logistic regression was used to measure the main treatment effect (proportion of participants adherent to lifestyle change) at 6 or 3 months, adjusting for baseline adherence level and stratification factor (smoking status). Analysis of covariance regression used to evaluate treatment effect on continuous secondary outcomes, adjusting for baseline outcome value and smoking status.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation sequence computer generated. Stratification by smoking status unlikely to bias results.
	Allocation concealment	Low risk	Randomisation performed by independent researcher.
	Risk of bias due to deviations from intended interventions (assignment)	High risk	Unable to blind due to nature of intervention. For self-reported subjective outcomes, lack of blinding may bias results. There were no deviations from the intended intervention reported, although both groups received intensive usual care of which uptake in each group was not measured.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	There was good adherence to the intervention, with at least 95% of participants interacting.
	Missing outcome data	Low risk	No evidence of incomplete outcome data, with intention to treat analysis reported for all randomised participants.
	Risk of bias in measurement of the outcome	High risk	Outcome assessors were not blinded although this would be possible. As outcomes were elicited through telephone

Bibliographic reference/s	**Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, and Maddison R(2015) Text message and internet support for coronary heart disease self-management: Results from the Text4Heart randomized controlled trial. Journal of Medical Internet Research 17(10), No-Specified**		
Study name	Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial		
			interviews, this may bias results.
	Risk of bias in selection of the reported result	Low risk	All outcomes reported in protocol reported in study.
	Other sources of bias	None identified	
	Overall Risk of Bias	High	
Source of funding	The study was funded in part by a Health Research Council Sir Charles Hercus Fellowship and a HOPE Selwyn Foundation Scholarship in Ageing Research. Dr Maddison was supported by a Health Research Council Sir Charles Hercus Fellowship.		
Comments	-		
Additional references	Intervention detail extracted from corresponding study protocol: Dale LP, Whittaker R, Jiang Y, Stewart R, Rolleston A, Maddison R. Improving coronary heart disease self-management using mobile technologies (Text4Heart): a randomised controlled trial protocol. Trials 2014;15:71		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences	X	
	Feedback and monitoring	X	
	Goals and planning		
	Social support		
	Self-belief	X	
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		

Dassen et al 2018

Bibliographic reference/s	**Dassen FCM; Houben K; Van B; Gerard JP; Jansen A; Gamified working memory training in overweight individuals reduces food intake but not body weight. Appetite 2018 May 1;124:89-98**		
Study name	Gamified working memory training in overweight individuals reduces food intake but not body weight		
Registration			
Study type	RCT		
Study dates	Not reported.		
Objective	To examine the effect of working memory (WM) training on thoughts relating to eating, weight and shape, emotional eating, number of snacks consumed, and healthy eating in people overweight or obese. The study also looked at the effect of WM training on non-trained WM tasks and executive function and self-control in daily life.		
Country/ Setting	Recruitment happened in local newspapers, supermarkets, and gyms, via social media, and via a general database managed by our research group.		
Number of participants / clusters	N=91 N=51 in the intervention group N=40 in the control group		
Attrition	Intervention: 17 (33%) were lost to follow-up. Control: 7 (18%) were lost to follow-up.		
Participant /community characteristics	At baseline, no difference in background characteristics or body weight, percentage weight loss, waist circumference, self-efficacy in dieting, energy-dense food score		
Method of allocation	Not reported		
Inclusion criteria	Eligibility criteria for participation were checked via a ten-minutes screening by phone by a research assistant and required that participants were aged 18-60, were overweight (as indexed by a self-reported BMI above 25), and motivated to put in effort to achieve weight loss. Motivation was assessed via four statements which were answered on a 5-point Likert scale ranging from (1) 'totally not' to (5) 'extremely'. The items were: (1) 'How important is it for you to lose weight?', (2) 'Do you intend to lose weight from now on?', (3) 'How determined are you to lose weight?' and (4) 'How hard will you try to lose weight?'. In order to meet inclusion criteria, participants had to score at least 3 on all statements.		
Exclusion criteria			
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name		
	Rationale/theory/Goal	A serious game was developed to improve cognitive ability. Game-elements were added to the original training.	
	Materials used	Game	

	All participants, n=91
Age, yrs, mean (SD)	47.97 (15.61)
BMI, kg/m^2, mean (SD)	30.76 (3.77)
Female, N (%)	74.7

Bibliographic reference/s	**Dassen FCM; Houben K; Van B; Gerard JP; Jansen A; Gamified working memory training in overweight individuals reduces food intake but not body weight. Appetite 2018 May 1;124:89-98**	
Study name	Gamified working memory training in overweight individuals reduces food intake but not body weight	
	Procedures used	The game was centred around creating a restaurant to the participants' preferences. By completing WM modules, items for their restaurants came available to participants. Modules included visuospatial tasks, backward digit span task, and object memory task. Task difficulty was adjusted based on the performance of the participant. Game difficulty was kept at basic for the control condition. Psychoeducation about weight loss and a healthy lifestyle was completed at the same time as the 25 sessions of WM training. The 4 sessions had themes: general principles of weight loss; environment of unhealthy behaviours and making a personal diet plan; physical activity, its benefits and how to make it part of daily life; strategies for dealing with difficult moments.
	Provider	
	Digital platform	Online, webpages.
	Location	At home
	Duration	
	Intensity	Participants were required to perform a minimum of 20 training sessions and a maximum of 25 training sessions, with a minimum interval of 24 h and a maximum interval of 48h between sessions. If participants missed more than five sessions, they dropped out of the study.
	Tailoring/adaptation	Task difficulty was based on performance.
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up		
Data collection	2-back task was conducted to test cognitive ability in non-trained WM tasks. Memory of letter series were tested in this study. Restraint scale was assessed at baseline to test how much participants were trying to control their food intake. Bogus taste test was taken at post-test, assessing how much energy-dense food they wanted to consume and how much hunger they felt before eating and how much they liked the food. BRIEF-A to assess executive functions in daily environment. Brief Self-Control Scale to assess general self-control.	

<table>
<tr><td>Bibliographic reference/s</td><td>Dassen FCM; Houben K; Van B; Gerard JP; Jansen A; Gamified working memory training in overweight individuals reduces food intake but not body weight. Appetite 2018 May 1;124:89-98</td></tr>
<tr><td>Study name</td><td>Gamified working memory training in overweight individuals reduces food intake but not body weight</td></tr>
<tr><td></td><td>Dutch Eating behaviour questionnaire to measure emotional, external, and restrained eating.
Eating disorder examination to measure frequency and severity of eating disorder pathology.
Healthy eating behaviour questionnaire to evaluate behaviour in daily life.
BMI and %BMI-loss was also recorded.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Table 1. Weight and healthy eating outcomes, at baseline and 6 months follow-up
<table>
<tr><th></th><th>Intervention</th><th>Control</th><th>β (SE)**</th></tr>
<tr><td rowspan="2">BMI, mean (SD)</td><td>Baseline (n=51): 30.96 (3.64)</td><td>Baseline (n=40): 30.49 (3.97)</td><td rowspan="2">-0.24 (0.36)</td></tr>
<tr><td>6 months (n=34): 29.65 (3.80)</td><td>6 months (n=33): 30.34 (4.55)</td></tr>
<tr><td rowspan="2">Healthy eating*, mean (SD)</td><td>Baseline (n=51): 18.88 (3.44)</td><td>Baseline (n=40): 18.90 (3.43)</td><td rowspan="2">-0.45 (0.76)</td></tr>
<tr><td>6 months (n=34): 20.56 (2.31)</td><td>6 months (n=33): 20.15 (2.96)</td></tr>
</table>
*Healthy eating score out of a total of 25.
** Result of mixed linear regression for time effects on BMI and healthy eating. Predictors were condition*time, correcting for age, sex and education level. The condition*time effect is the group difference with respect to the change from baseline to 6 months.</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td></td></tr>
<tr><td>Statistical Analysis</td><td>Intention to treat analyses were conducted. Data was analysed using mixed linear regression, with repeated measures within persons. Condition was between-subjects factor, either intervention or control, and time as a within-subjects factor, baseline, posttest, 1 month, and 6 months. Covariates were age, sex, and education level. The effect of training was examined by testing the interaction between time and condition, since no group difference was expected at pretest due to randomization.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement</th><th>Comments</th></tr>
<tr><td>Randomization process</td><td>Some concerns</td><td>No detail on how randomisation or allocation was performed but no baseline differences.</td></tr>
<tr><td>Deviations from the intended interventions (assignment)</td><td>Low risk</td><td>Participants and personnel not aware of assignment and delivered by</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Dassen FCM; Houben K; Van B; Gerard JP; Jansen A; Gamified working memory training in overweight individuals reduces food intake but not body weight. Appetite 2018 May 1;124:89-98**		
Study name	Gamified working memory training in overweight individuals reduces food intake but not body weight		
			computer. ITT analyses used.
	Deviations from the intended interventions (adherence)	High risk	Poor adherence to intervention and no analyses to assess effect of adhering. Per protocol analyses may have been used for 6-month follow-up.
	Missing outcome data	Some concerns	High attrition and possible than missingness depends on true value
	Incomplete outcome data	Low risk	Measurement appropriate
	Selective reporting	Some concerns	No registered protocol.
	Other sources of bias		
	Overall Risk of Bias	High risk	
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning		
	Social support		
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		x
	Regulation		
	Comparison of behaviour		

Dunn et al 2019

Bibliographic reference/s	**Dunn CG; Turner-McGrievy GM; Wilcox S; Hutto B; Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial. Journal of the Academy of Nutrition and Dietetics. 2019 Sep;119(9):1525-1532.**
Study name	**Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial**
Registration	NCT02868853
Study type	RCT
Study dates	October 2016 – April 2017
Objective	To test a mobile photography-based DSM app compared with a calorie tracking DSM app on tracking frequency and weight loss in a remotely delivered behavioural weight-loss intervention in people overweight or obese.
Country/ Setting	USA
Number of participants / clusters	191 were assessed for eligibility, 123 were excluded. Of 68 invited to orientation, 43 completed baseline assessment and randomisation. N=43 n=23 into photo group n=20 in calorie group
Attrition	Photo group: 9 (39%) lost to follow-up Calorie group: 4 (20%) lost to follow-up
Participant /community characteristics	**Table 1. Baseline characteristics for all participants**

Age, mean (SD)	42.4 (12.4)
Sex, %female	90.7
BMI, mean (SD)	34.5 (5.7)
Education (%)	
High school	2.3
Some college	18.6
College graduate	30.3
Advanced degree	48.8
Occupation (%)	
No current employment	4.7
Service occupation	2.3
Technical, sales, administrative	11.6
Executive, managerial	11.6
Professional specialty	39.5
Retired	2.3
Other	30.0

Bibliographic reference/s	**Dunn CG; Turner-McGrievy GM; Wilcox S; Hutto B; Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial. Journal of the Academy of Nutrition and Dietetics. 2019 Sep;119(9):1525-1532.**	
Study name	**Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial**	
	Ethnicity (%) White Black Other	 81.4 16.3 2.3
Method of allocation	Researchers who took measurements blinded to group assignment at baseline. Randomisation sequence developed by computer-based random number generator.	
Inclusion criteria	BMI 25-49.9 Interested in losing weight Owned either an Apple or Android device Aged 18-65 Stable medical condition No conditions that affected body weight Willing to accept random assignment	
Exclusion criteria	Not contactable Lost more than 10lbs in the past 6 months History of eating disorder Currently enrolled on weight loss programme Unavailable for meetings No longer interested Previously participated in previous weight-loss study involving podcasts	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	2SMART
	Rationale/theory/Goal	Using photos instead of calories for keeping a food diary would lead to greater weight loss.
	Materials used	Both groups listened to the same biweekly podcasts that included weight-loss techniques based on social cognitive theory and the diabetes prevention programme.
	Procedures used	*Calorie app* Participants downloaded the FatSecret app and practiced entering sample meals and foods during orientation. During the study, participants entered consumed food and beverages consumed, wither from a database of food available or manually. The app gave a suggested daily calorie intake dependent of the participant's weight.

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Dunn CG; Turner-McGrievy GM; Wilcox S; Hutto B; Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial. Journal of the Academy of Nutrition and Dietetics. 2019 Sep;119(9):1525-1532.</td></tr>
<tr><td>Study name</td><td colspan="2">Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial</td></tr>
<tr><td rowspan="9"></td><td></td><td>Photo app
Participants downloaded the Meal-Logger app at orientation and were provided with an overview. The Meal Logger app is a photo food journal to track and rate foods, view and comment on others' foods. Participants received training on the Traffic Light Diet. "Green" (nutrient-dense) foods are meant to be eaten more often and "red" (energy-dense) foods should be eaten rarely.</td></tr>
<tr><td>Provider</td><td>-</td></tr>
<tr><td>Digital platform</td><td>App</td></tr>
<tr><td>Location</td><td>At home</td></tr>
<tr><td>Duration</td><td>6 months</td></tr>
<tr><td>Intensity</td><td>Multiple times a day, whenever food is consumed.</td></tr>
<tr><td>Tailoring/adaptation</td><td>-</td></tr>
<tr><td>Planned treatment fidelity</td><td></td></tr>
<tr><td>Actual treatment fidelity</td><td></td></tr>
<tr><td>Other details</td><td></td></tr>
<tr><td>Follow up</td><td colspan="2">6 months</td></tr>
<tr><td>Data collection</td><td colspan="2">Outcome measures included number of days diet was tracked defined as having tracked at least one food or beverage item on a given day, number of podcasts downloaded, and weight. Weekly, researchers recorded the number of days diet was tracked and the number of podcasts downloaded. Weight was measured at baseline, Week 6 (December 2016) and
Month 6 (April 2017). Participants received $10 incentives for completing study activities at 6-week and 6-month time points.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Table 1. Dietary and engagement outcomes at 6 months
<table>
<tr><th></th><th>Photo group (n=23)</th><th>Calorie group (n=20)</th><th>p value between groups</th></tr>
<tr><td>Weight change, mean kg (SE; 95% CI)</td><td>-2.5 (0.9; -0.7, -4.3)</td><td>-2.4 (0.9; -0.7, -4.2)</td><td>0.74</td></tr>
<tr><td>Record diet, mean (SE)</td><td>46.2 (50.1)</td><td>69.6 (61.0)</td><td>0.18</td></tr>
<tr><td>Download podcasts</td><td>14.2 (13.0)</td><td>15.0 (13.9)</td><td>0.86</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Dunn CG; Turner-McGrievy GM; Wilcox S; Hutto B; Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial. Journal of the Academy of Nutrition and Dietetics. 2019 Sep;119(9):1525-1532.**
Study name	**Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial**
	Correlation between number of days tracked and weight change, r (p value) | 0.51 (0.06) | 0.70 (0.004) |
Important outcomes measures and effect size. (time points)	
Statistical Analysis	Sample size for this study was calculated (α=0.05 and power 1-β=80%) to detect between-group differences in frequency of days tracked using data from a previous 6-month weight loss intervention in which participants who tracked a mean of 6 days per week lost significantly more weight compared who participants who tracked 3 days per week. To detect differences between groups, a minimum of 17 participants needed to be assigned to each group. To ensure power and anticipating up to 20% attrition, researchers determined that a minimum of 40 participants should be randomized in total. Baseline differences between groups assessed by Wilcoxon rank sum and chi-square test where appropriate. Analysis was ITT. Repeated-measures models were used to estimate weight and other outcomes using PROC MIXED in SAS statistical software version 9.4.36 Final models included time, group, and a time by group interaction and accounted for participant age. Contrasts were constructed comparing weight loss at 6 weeks and 6 months between groups. Independent samples t tests were used to compare the number of podcasts downloaded and the number of days anything was tracked by group. Spearman correlations were used to estimate relationships between intervention behaviours and weight loss.

Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement**	**Comments**
	Randomization process	Low risk	Randomisation done by computer.
	Deviations from the intended interventions (assignment)	Low risk	Participants possibly aware of assignment but not possible to deviate. ITT analyses.
	Deviations from the intended interventions (adherence)	Low risk	Participants did not deviate, and intervention implemented for most participants.

Bibliographic reference/s	**Dunn CG; Turner-McGrievy GM; Wilcox S; Hutto B; Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial. Journal of the Academy of Nutrition and Dietetics. 2019 Sep;119(9):1525-1532.**		
Study name	**Dietary Self-Monitoring Through Calorie Tracking but Not Through a Digital Photography App Is Associated with Significant Weight Loss: The 2SMART Pilot Study-A 6-Month Randomized Trial**		
	Missing outcome data	Low risk	Some attrition but not likely and not biased by true value in an intervention vs other intervention study.
	Measurement of the outcome	Low risk	Methods for measurements appropriate
	Selection of the reported result	Low risk	No deviations from prospectively registered protocol
	Other sources of bias		
	Overall Risk of Bias	Low risk	
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		x
	Goals and planning		
	Social support		x
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		
	Comparison of behaviour		

Ferrante et al 2018

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial
Registration	ClinicalTrials.gov NCT02699983
Study type	RCT
Study dates	January 2016 – October 2017
Objective	To examine feasibility and potential efficacy of SparkPeople plus an activity tracker for weight loss in breast cancer survivors in New Jersey.
Country/ Setting	USA
Number of participants / clusters	Out of 92 screened, 37 were randomised N=20 in intervention group N=17 in active control group
Attrition	In the intervention group, a further 2 participants were excluded after allocation as 1 has a BMI<25 and 1 had no internet. Intervention group: 1/17 (6%) was lost to follow-up. Control group: 0 lost to follow-up.
Participant /community characteristics	**Table 1. Baseline characteristics for all participants**

	Control	Intervention
Age ≥60 years, %	58.8	61.1
Smoking status* (%)		
Never	47.1	83.3
Current	11.8	11.1
Former	41.2	5.6
Education (%)		
High school	23.5	11.1
Some college	35.3	27.8
College graduate	41.2	61.1
Employment status (%)		
Employed	35.3	22.2
Unemployed	17.7	22.2
Retired	47.1	55.6
Receiving hormone therapy, %yes	18	17

**Only baseline characteristic that was significantly different between groups (p=0.023)*

Method of allocation	A researcher not involved in data collection prepared two randomization schedules, one for each age strata (< or ≥60 years), using a computer-based

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**	
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial	
	random number generator, with assignment kept in separately sealed sequentially numbered envelopes.	
Inclusion criteria	Self-identified as African American Aged 21-75 BMI ≥ 25 Stage 0-III breast cancer at least 2 years from diagnosis Can read English Home access to internet via computer or smartphone	
Exclusion criteria	Serious medical or psychiatric conditions or disability limiting moderate physical activity Use of weight loss medications or supplements in past 3 months Bariatric surgery 5% loss in body weight in previous 6 months Pregnancy, breastfeeding or postpartum within 3 months Leaving the area in the next 6 months	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	SparkPeople
	Rationale/theory/Goal	Using the website will increase physical activity and weight loss.
	Materials used	SparkPeople website, Fitbit Charge
	Procedures used	All participants received a handout of their goals for weight loss (5% weight loss over 6 months), caloric intake (1200–1500 kcal daily), and physical activity (starting with mild–moderate exercise 10 minutes per day with stepwise increase in time and intensity. *Intervention* Participants allocated to intervention received 1 30-minute session on the SparkPeople website. The website includes: (a) educational and motivational articles and videos on nutrition, fitness, wellness, and stress management; (b) self-monitoring nutrition and weight tracking tools; (c) direct integration with many popular physical activity trackers; (d) recipes and daily meal plans; (e) incentives for engagement (SparkPoints); (f) social support communities, including discussion forums, teams, challenges, and expert blogs, (g) options for daily or weekly content delivered to members' email; and (h)

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**	
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial	
		exercise videos from certified personal trainers and fitness instructors. Control group participants received access to SparkPeople after 6 months.
	Provider	-
	Digital platform	Online, webpages
	Location	At home
	Duration	6 months, extended to 12 months for intervention group
	Intensity	Self-monitor diet via SparkPeople at least weekly, with weekly text reminders for the first 3 months to do so.
	Tailoring/adaptation	-
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up	6/12 months	
Data collection	Weight, height, waist circumference, and blood pressure were taken during the baseline visit. To account for the novelty factor affecting baseline physical activity levels, day 8 was counted as baseline. Days with less than 1000 steps were excluded. QOL was measured with Adult Cancer Survivors Scale. Adherence was determined by SparkPeople usage: number of days participants logged into website, number of days they logged food and total SparkPoints earned (an indication of website engagement). Adherence to Fitbit was determined by number of days of recorded steps. Missing Fitbit data were recorded as 0.	
Critical outcomes measures and effect size. (time points)	**Table 1. Dietary and physical activity outcomes between baseline and 6 months**	

	Intervention	Control	p value between groups
Weight, mean kg (SD)	Baseline: 91.98 (15.35)	Baseline: 104.06 (22.65)	
	Mean difference: -1.71 (1.88)	Mean difference: -2.53 (4.00)	0.461
p value baseline to 6 months	0.006	0.002	
BMI, mean kg/m^2 (SD)	Baseline: 35.64 (6.64)	Baseline: 37.88 (7.06)	

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial

	Mean difference: -0.74 (0.99)	Mean difference: -0.91 (1.39)	0.692
p value baseline to 6 months	0.006	0.012	
Waist circumference, mean cm (SD)	Baseline: 110.59 (11.38)	Baseline: 115.42 (18.06)	
	Mean difference: -3.56 (4.70)	Mean difference: -0.84 (5.21)	0.133
p value baseline to 6 months	0.005	0.58	
Total fairly/very active minutes/week, mean (SD)	Baseline: 71.94 (96.0)	Baseline: 210.18 (282.86)	
	Mean difference: -34.89 (98.49)	Mean difference: 11.35 (110.87)	0.044
p value baseline to 6 months	0.151	0.679	
Quality of life*, mean (SD)	Baseline: 109.78 (39.26)	Baseline: 108.76 (36.17)	
	Mean difference: -9.44 (16.97)	Mean difference: -4.65 (24.21)	0.500
p value baseline to 6 months	0.031	0.440	
Steps/day, mean (SD)	Baseline: 5622.33 (2571.32)	Baseline: 8092.54 (4814.03)	
	Mean difference: -107.07 (2184.94)	Mean difference: -205.47 (2147.79)	0.258
p value baseline to 6 months	0.838	0.699	
Calories/day, mean kcal (SD)	Baseline: 1563.71 (651.84)	Baseline: 1610.88 (573.01)	
	Mean difference: -216.65 (606.09)	Mean difference: -173.06 (805.40)	0.860
p value baseline to 6 months	0.160	0.389	

**scale from 0-329*

Table 2. Relationship between weight and diet outcomes with engagement, intervention only (n=17) - results of regression analysis for 6-month follow-up

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial

Outcome	Mean change (SD)	Mean days logged food (SD)	Correlation, r (95% CI)	p-value
Waist circumference (cm)	-3.556 (4.699)	1.145 (1.249)	-0.526 (-0.994, -0.057)	0.030
Generic quality of life*	-8.647 (16.428)		-0.518 (-0.989, -0.047)	0.033
Calories/day (kcal)	-216.647 (606.086)		-0.465 (-0.952, 0.022)	0.060

**Quality of life – lower score is better*

Table 3. Engagement data

Outcome	Arm	Months 1-3	Months 4-6	Months 7-9	Months 10-12
Days logged in/week, mean (SD)	I	3.01 (2.07)	2.30 (2.30)	1.86 (2.32)	1.46 (2.29)
	DI	2.30 (2.27)	1.14 (1.64)	-	-
Days logged food/week, mean (SD)	I	1.69 (1.84)	0.60 (0.87)	0.34 (0.72)	0.11 (0.26)
	DI	1.50 (1.85)	0.71 (1.17)	-	-

I: intervention; DI: delayed intervention

Important outcomes measures and effect size. (time points)	
Statistical Analysis	Intention to treat analyses carried out. Imputation for missing data completed by last observation carried forward. Sensitivity analyses included only participants with 6-month follow-up and with baseline BMI over 30. Paired t-test was used to compare change in outcomes within each participant from baseline to 3, 6, and 12 months. Independent sample t-tests (or chi-square and two-tailed Fisher's Exact Test for categorical data) assessed significance of differences between groups. We evaluated association of SparkPeople adherence (days logged in, days logged food, total SparkPoints earned) with main outcomes at 3, 6, and 12 months using correlations and linear regression, with 95% confidence intervals.

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**		
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial		
	All analyses were conducted using SAS software version 9.4 (SAS Institute, Cary, NC), and an overall significance level of 0.05 was used.		
Risk of bias (ROB) **Overall ROB**	Outcome	Judgement	Comments
	Randomization process	Low risk	Randomisation done by computer and allocation concealed.
	Deviations from the intended interventions (assignment)	Low risk	Participants possibly aware of assignment but did not deviate. ITT analyses.
	Deviations from the intended interventions (adherence)	Low risk	Participants did not deviate, and intervention implemented for most participants.
	Missing outcome data	Some concerns	Some attrition but not likely that is depends on true value.
	Measurement of the outcome	Low risk	Methods for measurements appropriate
	Selection of the reported result	Low risk	No deviations from prospectively registered protocol
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		

Bibliographic reference/s	**Ferrante JM; Devine KA; Bator A; Rodgers A; Ohman-Strickland PA; Bandera EV; Hwang KO. Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial. Translational Behavioural Medicine. 2018 Dec 9. doi: 10.1093/tbm/iby124.**	
Study name	Feasibility and potential efficacy of commercial mHealth/eHealth tools for weight loss in African American breast cancer survivors: pilot randomized controlled trial	
	Natural Consequences	
	Feedback and monitoring	x
	Goals and planning	
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Gell et al 2015

Bibliographic reference/s	**Gell Nancy M, and Wadsworth Danielle D (2015) The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial. Journal of physical activity & health 12(6), 756-63**
Study name	The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial
Registration	Not reported
Study type	RCT, adults
Study dates	Recruitment occurred on a rolling basis over 5 weeks in late summer and early fall of 2010
Objective	The study evaluated the effects of a text message intervention on physical activity in adult working women
Country/ Setting	Female employees at a public university in the Southeastern United States
Number of participants / clusters	Eighty-seven participants were randomized to an intervention (n=41) or control group (n=46). Pedometer step counts and measures of self-efficacy were collected at baseline, 12 and 24 weeks.
Attrition	Eighty-seven women completed baseline measures to participate in the study. At 12 weeks, 77 participants (n=39 for the intervention group, n=38 for the control group) provided at least 3 days of pedometer data. At 24 weeks, 74 participants (n=37 for the intervention group, n=37 for the control group) completed the follow-up measures (Figure 1). The attrition rate was 10% for the intervention group and 22% for the control group at 24 weeks.
Participant /community characteristics.	None reported

Bibliographic reference/s	**Gell Nancy M, and Wadsworth Danielle D (2015) The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial. Journal of physical activity & health 12(6), 756-63**		
Study name	The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial		
Method of allocation	After baseline measurements, participants were randomly assigned to the intervention or control group. To control for a potential diffusion effect (i.e. contamination from intervention group to control group), participants from the same department and/or work area were randomly assigned as a group to either the intervention or control groups.		
Inclusion criteria	Eligibility requirements included not being pregnant, answering “no” to all questions on the Physical Activity Readiness Questionnaire35 or obtaining a physician’s consent to participate, full-time employment (≥ 32 hours/week), a primary work location on campus, and willingness to receive text messages to a personal cell phone		
Exclusion criteria	None reported.		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name		
	Rationale/theory/Goal	Intervention participants received approximately three text messages per week that were motivational, informational, and specific to performing physical activity.	
	Materials used	SMS messages	
	Procedures used	Participants in the intervention group were sent 3 text messages per week to their personal cell phone via SMS for 24 weeks. Fewer messages were sent during holiday weeks when the University was officially closed.	
	Provider		
	Digital platform	Messages were sent by SMS from a free-access email account. To confirm delivery of the text messages by each cellular company, team members (investigators, research assistants) with cellular service provided by the same companies also received the text messages and notified the study leader if messages were not received.	
	Location		
	Duration	24 weeks	
	Intensity	Although, the days and times for the messages varied over the course of the intervention, messages were sent during typical wake-time hours and to all participants at the same time. While messages were not sent at a specific time each day, the majority of messages were	

Bibliographic reference/s	**Gell Nancy M, and Wadsworth Danielle D (2015) The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial. Journal of physical activity & health 12(6), 756-63**	
Study name	The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial	
		sent based on optimal time availability for physical activity planning such as early morning for time management of the day, in the hour prior to the lunch break which was standard across campus, and in the hour prior to the official close of University offices.
	Tailoring/adaptation	All messages were unique with no repetition of the same message and were limited to 150 characters. All participants received the same content for messages and the same number of messages. Messages were designed to be motivational, informational, and specific to performing physical activity. Content of the messages included the following: 1) Recommended amounts of physical activity needed to meet guidelines; 2) Specific suggestions for ways to meet the guidelines; 3) Self-regulation strategies such as goal-setting, relapse prevention, engaging social support, self-monitoring, time management and reinforcement; and 4) Strategies to address the most common barriers identified from the baseline and mid-point self-efficacy instrument. Content was adjusted for weather conditions (e.g., alternatives to prescribed walks for rainy days and higher temperatures) and seasonal events (e.g., change from Daylight Savings Time, strategies to engage in physical activity over holiday breaks).
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up	24 weeks (6 months)	
Data collection	Physical activity levels were measured via step counts from an unsealed Omron pedometer (Model # HJ-720ITC). This particular pedometer has been shown to have good validity and reliability in self-paced walking in both healthy and overweight adults with a mean absolute percent error score of < 3.0%.40 Participants were instructed to wear the pedometer for seven days and daily step counts were downloaded directly for analysis at the end of the seven days. Daily step counts were averaged for participants with at least three days of wear time, including two workdays and one weekend day, for a minimum of eight hours.	

Bibliographic reference/s	**Gell Nancy M, and Wadsworth Danielle D (2015) The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial. Journal of physical activity & health 12(6), 756-63**		
Study name	The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial		
Critical outcomes measures and effect size. (time points)	**Step counts**	**Intervention mean (SD) n=41**	**Control mean (SD) n=46**
	Baseline	6752.1 (2653.3)	6737.9 (2619.3)
	12 weeks	6540.0 (2426.6)	5685.0 (2233.6)
	24 weeks	6867.7 (2227.0)	6189.0 (2297.0)
	No sig difference in mean steps/day at 24 weeks (6867.7 SD±2227.0 vs. control 6189.0 SD±2297.0, p= .06		
Important outcomes measures and effect size. (time points)	N/A		
Statistical Analysis	Data analysis was performed using SPSS. Steps counts were assessed for normal distribution. Two ANCOVAs, with the baseline scores as the covariate, examined differences in step counts and self-efficacy to perform exercise between the groups at 12 and 24 weeks. Intention to treat analysis was used and the Alpha level was set a priori at .05.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Some concerns	Randomisation present. There were no statistically significant differences between the intervention and control participants at baseline for age, BMI, activity levels, or self-efficacy. However only female participants were recruited.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Blinding not feasible due to nature of intervention. To control for a potential diffusion effect (i.e. contamination from intervention group to control group), participants from the same department and/or work area were

Bibliographic reference/s	**Gell Nancy M, and Wadsworth Danielle D (2015) The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial. Journal of physical activity & health 12(6), 756-63**		
Study name	The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial		
			randomly assigned as a group to either the intervention or control groups.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None reported
	Missing outcome data	Low	The attrition rate was 10% for the intervention group and 22% for the control group at 24 weeks. No difference in age, BMI, baseline step counts, or self-efficacy scores between participants who dropped out and those who completed the study.
	Risk of bias in measurement of the outcome	Low	None reported, objective outcome measure.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	Any other publications which have contributed evidence to this data extraction for the study		
Behaviour change techniques (16 theoretical clusters	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief	X	

Bibliographic reference/s	**Gell Nancy M, and Wadsworth Danielle D (2015) The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial. Journal of physical activity & health 12(6), 756-63**	
Study name	The Use of Text Messaging to Promote Physical Activity in Working Women: A Randomized Controlled Trial	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Glasgow et al. 2012

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**			
Study name	-			
Registration	Unknown			
Study type	3-arm pragmatic RCT			
Study dates	Data was collected from April 2008 to August 2010 and analysed from September 2010 to January 2011.			
Objective	To evaluate the long-term effects of an internet based, computer-assisted diabetes self-management (CASM) intervention and a CASM plus human support intervention in people with T2DM.			
Country/ Setting	5 primary care clinics part of Kaiser Permanente, in Colorado. Clinicals were selected based on variability in size, location and socioeconomic status of neighbourhood and to maximise percentage of Latino participants.			
Number of participants / clusters	N= 463 A sample size of 424, allowing for 20% attrition resulted in a power of.09 (alpha =.05, 2-tailed), to detect an effect size of .32 between combined intervention conditions and the enhanced usual care, and a power of .80 to detect an effect of .28 between the 2 intervention arms on behaviour change outcomes.			
Attrition	Arm 1 (CASM): 31.4% attrition; arm 2 (CASM+): 25.3% attrition; arm 3 enhanced usual care: 18.2% attrition			
Participant /community characteristics.		**EUC, mean (SD) or %**	**CASM, mean (SD) or %**	**CASM+, mean (SD) or %**
	Age (years)	58.7 (9.1)	58.7 (9.3)	58.7 (9.3)
	% Male	48.5%	55.4%	46.3%
	Race			
	-American Indian/Alaska	11.1%	4.9%	4.8%
	-Asian	1.6%	1.9%	1.4%
	-Black or African American	12.7%	14.8%	18.4%
	-White	70.6%	74.1%	70.7%

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**			
Study name	-			
	Latino ethnicity	16.8%	25.3%	25.3%
	Income			
	-<$49,999	50.4%	45.7%	46.0%
	-$50,000-$89,999	36.6%	33.5%	35.7%
	-$90,000	13.0%	20.6%	18.2%
	High school or less education	13.0%	19.9%	23.6%
	% low-moderate health literacy	7.6%	6.0%	4.3%
	Numeracy	4.32 (0.8)	4.21 (1.1)	4.39 (1.0)
	Computer use			
	-never to 2.5 hrs/week	15.1%	16.6%	16.6%
	-3 to 6.5 hrs/week	21.2%	20.2%	12.4%
	-7 to 8.5 hrs/week	4.5%	5.4%	8.0%
	>9 hrs/week	59.1%	57.7%	63.0%
	Smoker	9.1%	10.1%	13.0%
	EUC = enhanced usual care; CASM = computer-assisted self-management			
Method of allocation	Participants were individually randomised via a computer program developed by a computer programmer and statistician.			
Inclusion criteria	25 to 75 years of age; diagnosis of type 2 diabetes, BMI 25 kg/m^2 or greater, at least one other risk factor for heart disease (e.g. hypertension, smoking, hyperlipidaemia); access to a telephone and at least biweekly access to the internet, ability to read and write English or Spanish and ability to perform mild to moderate exercise.			
Exclusion criteria	-			
Intervention	**TIDieR Checklist criteria**	**Details**		
	Brief Name			
	Rationale/theory/Goal	Social-ecological theory and social cognitive theory		
	Materials used	Arm 1: Computer-assisted self-management (CASM).		
	Procedures used	Participants chose easily achievable goals on medication adherence, PA and food choices and recorded progress, receiving immediate feedback on success of meeting goals over the past 7 days. The website included a graphic display of the participants HbA1c, blood pressure and cholesterol results; a moderated forum; community resources (recipes, printable handouts); quizzes and motivational tips.		

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**	
Study name	-	
		Action plans were made by participants after 6 weeks. Users identified barriers to achieving goals and chose from a list of problem-solving strategies to overcome these barriers. Participants received periodic motivational calls and prompt to use the website from an automated system. Arm 2: Computer-assisted self-management plus enhanced social support (CASM+). All aspects of arm 1, plus 2 follow-up calls (week 2 and 8 to discuss problems and discuss action plans) and an invitation to attend 3 group visits with other participants. Group sessions focused on healthy eating, interacting with a physician, using community resources, and maintenance enhancement through use of analysing personal behaviour chains related to relapse. Arm 3: enhanced usual care – provided computer-based health risk appraisal feedback and recommended preventive care behaviours using the same contact schedule as the other arms but did not include the key intervention procedures.
	Provider	Periodic motivational calls were automated and delivered to both intervention groups; 2 telephone calls were made to CASM+ participants by a research project member and a diabetes care coordinator; the CASM+ intervention group also received 3 group sessions led by a nutritionist, a behaviour change expert and a family physician.
	Digital platform	Online, in person and via phone calls
	Location	Online and in group sessions (unknow location)
	Duration	Unclear
	Intensity	Arm 1: website access, unknown intensity Arm 2: website, plus 3 120-minute group sessions
	Tailoring/adaptation	Goals were tailored to each individual
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	12 months	
Data collection	Eating behaviours were assessed using the Ammerman et al. Starting the Conversation scale; estimated fat intake was assessed using the NCI Percent	

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**
Study name	-
	Energy from Fat Screener; total weekly caloric expenditure in PA was assessed using CHAMPS instrument; self-efficacy was measured with Lorig's Diabetes Self-Efficacy scale (1 to 10); use of problem-solving skills was assessed on the Positive Transfer of Past Experience from the Diabetes Problem Solving Scale of Hill-Briggs; general health status was measured using the visual analogue scale from the EuroQol health status instrument; Diabetes Distress Scale was used to assess diabetes-related quality of life.

Critical outcomes measures and effect size

Intention to treat	Baseline control (SE)	Baseline CASM/ CASM+ (SE)	12 months control (SE)	12 months CASM/ CASM+ (SE)	Effect size at 12 months	Condition x Time, chi-square
Eating habits (range 1 [worst] to 3 [best])	2.13 (0.03)	2.18 (0.02)	2.23 (0.03)	2.32 (0.02)	0.15	9.01*
Fat intake (%; range 20 to 50)	35.18 (0.40)	34.86 (0.28)	33.91 (0.37)	33.22 (0.24)	0.09	6.28*
PA (Cals/Wk; range 0 to 10,000)	3915 (294)	3989 (165)	2882 (300)	3242 (179)	0.09	6.01*
BMI (kg/m^2; range 21 to 61)	34.8 (0.6)	34.9 (0.4)	34.8 (0.6)	34.6 (0.4)	0.12	1.13
HbA1c (%; range 5 to 16)	8.16 (0.16)	8.14 (0.10)	8.04 (0.14)	8.16 (0.09)	0.11	1.51
Lipid ratio (total/HDL; range 1 to 11)	3.81 (0.09)	3.99 (0.06)	3.77 (0.08)	3.88 (0.06)	0.09	1.47
Blood pressure, mean arterial pressure (mmHg; range 62 to 151)	96.0 (1.0)	95.1 (0.6)	93.4 (0.9)	93.6 (0.6)	0.09	0.73
10-yr CHD risk (%);	8.46 (0.49)	9.07 (0.38)	8.17 (0.48)	8.51 (0.38)	0.09	1.59

Bibliographic reference/s	Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92					
Study name	-					
	range 0 to 50)					
	General Health state (score; range 10 [poor health] to 100 [excellent health])	68.5 (1.5)	69.0 (1.0)	70.9 (1.5)	70.5 (1.1)	0.06	0.45
	Diabetes distress (score; range 1 [low] to 6 [high])	2.85 (0.11)	3.07 (0.07)	2.63 (0.11)	2.64 (0.07)	0.10	5.47

***p<0.05**

Intention to treat	Baseline CASM	Baseline CASM+	12 months CASM	12 months CASM+	Effect size	Time x condition, chi-squared
Eating habits (range 1 [worst] to 3 [best])	2.20 (.03)	2.17 (.02)	2.34 (.02)	2.29 (.02)	.07	0.78
Fat intake (%; range 20 to 50)	34.97 (.44)	34.76 (.36)	33.32 (.37)	33.12 (.31)	.002	0.43
PA (Cals/Wk; range 0 to 10,000)	4302 (233)	3662 (230)	3307 (252)	3174 (255)	.16	2.16
BMI (kg/m^2; range 21 to 61)	34.4 (0.5)	35.3 (0.5)	34.2 (0.5)	35.1 (0.6)	0.00	0.10
HbA1c (%; range 5 to 16)	8.03 (0.14)	8.26 (0.13)	8.10 (0.14)	8.23 (0.13)	0.09	0.68
Lipid ratio (total/HDL;	3.94 (0.09)	4.03 (0.09)	3.79 (0.08)	3.97 (0.10)	0.14	1.43

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**
Study name	-

range 1 to 11)						
Blood pressure, mean arterial pressure (mmHg; range 62 to 151)	95.2 (0.8)	95.0 (0.8)	92.8 (0.7)	94.4 (0.9)	0.15	2.67
10-yr CHD risk (%); range 0 to 50)	9.43 (0.59)	8.69 (0.48)	8.66 (0.55)	8.35 (0.51)	0.15	3.63
General Health state (score; range 10 [poor health] to 100 [excellent health])	70.8 (1.3)	67.1 (1.5)	71.9 (1.3)	69.0 (1.5)	0.05	0.72
Diabetes distress (score; range 1 [low] to 6 [high])	2.88 (0.10)	3.29 (0.10)	2.55 (0.08)	2.78 (0.09)	0.18	2.93

***p<0.05**

Month	CASM, mean (SD); median	CASM+, mean (SD); median
6	4.37 (7.31); 1	4.36 (6.12); 2
12	2.60 (5.76); 0	2.57 (5.22); 0

Website logins per month:

Efficacy data available at 4 months follow up but not extracted. Website use data available for months 1 to 12 but not extracted.

Important outcomes measures and effect size	-

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**		
Study name	-		
Statistical Analysis	Chi-squared tests and analyses of variance were used to evaluate differences in participant characteristics between groups, and between dropouts and those who completed the study at 12 months. Hierarchical multiple regression models were specified to test for potential effects (e.g. age, gender, computer experience, ethnicity, health literacy, numeracy education, insulin use and 10-year coronary heart disease risk). Generalised estimating equations models were used to compare long-term treatment effects on outcome measures from baseline to 12 months; covariates applied for age, education, Latino ethnicity, and gender at baseline, which were found in univariate analyses to be related to outcomes at baseline. Intention to treat analysis using missing data inputs using multiple imputation procedures was conducted, as well as a complete-case approach without missing data.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Some concerns	Participants were randomised via a computer program developed by a computer programmer and statistician, who was part of the research team, and there is no further explanation of allocation method (if any block randomised was used for example).
	Allocation concealment	Some concerns	Not able to blind participants due to nature of intervention, however there is no mention of any attempt to conceal allocation, and no mention of concealment from outcome assessors.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	No evidence that there was intervention or control contamination
	Risk of bias due to deviations from intended interventions (adherence)	High risk	From reported website logins at 12 months, attrition was high with median logins of 0. There was no report of how many participants attended the group

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**		
Study name	-		
			sessions, but the discussion eludes to moderate attrition.
	Missing outcome data	Low risk	No evidence of missing outcome data, with intention to treat and completer analysis both reported.
	Risk of bias in measurement of the outcome	High risk	No description if outcome assessors were blinded or how outcome assessment was conducted. Subjective outcomes reported by participants who were also not blinded to intervention group, and no description of how these were obtained (e.g. face-to-face with research staff or self-assessment survey).
	Risk of bias in selection of the reported result	Low risk	No evidence of selective reporting.
	Other sources of bias	Low risk	None identified.
	Overall Risk of Bias	High risk	
Source of funding	This study was supported by grant DK35524 from the National Institute of Diabetes and Digestive and Kidney Diseases.		
Comments	-		
Additional references	-		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat	X	
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief	X	
	Comparison of outcomes		

Bibliographic reference/s	**Glasgow RE, Kurz D, King D, Dickman JM, Faber AJ, Halterman E, Woolley T, Toobert DJ, Strycker LA, Estabrooks PA, Osuna Di, and Ritzwoller D (2012) Twelve-month outcomes of an Internet-based diabetes self-management support program. Patient education and counseling 87(1), 81-92**	
Study name	-	
	Comparison of behaviour	
	Identity	
	Shaping knowledge	
	Regulation	

Gomez et al 2016

Bibliographic reference/s	**Gomez Quinonez, S , Walthouwer M J, Schulz D N, de Vries , and H (2016) mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial. Journal of medical Internet research 18(11), e278**			
Study name	mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial			
Registration	Netherlands Trial Register: NTR4503			
Study type	RCT, adults			
Study dates	Baseline measurement in April 2014, follow-up measurement took place for 6 months in October 2014.			
Objective	The first aim of this study was to compare the efficacy of an mHealth and an eHealth version of a Web-based computer-tailored physical activity intervention with a control group. The second aim was to assess potential differences in use and appreciation between the 2 versions			
Country/ Setting	Netherlands			
Number of participants / clusters	Data collected among 373 Dutch adults at 5 points in time (baseline, after 1 week, after 2 weeks, after 3 weeks, and after 6 months).			
Attrition				
Participant /community characteristics.		eHealth (n=138)	mHealth (n=108)	Control (n=127)
	Female n (%)	98 (71)	77 (71.3)	83 (65.4)
	Age in years, mean (SE)	39.32 (12.10)	38.03 (12.23)	38.55 (11.74)
Method of allocation	We recruited participants from a Dutch online research panel and randomly assigned them to 1 of 3 conditions: eHealth (n=138), mHealth (n=108), or control condition (n=127). All participants were asked to complete questionnaires at the 5 points in time			
Inclusion criteria				

Bibliographic reference/s	**Gomez Quinonez, S , Walthouwer M J, Schulz D N, de Vries , and H (2016) mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial. Journal of medical Internet research 18(11), e278**		
Study name	mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial		
Exclusion criteria	Participants excluded in case of (1) physical conditions hindering engagement in physical activity, (2) pregnancy at the time of recruitment, (3) having a holiday scheduled for more than 5 working days during the study period, and (4) participation in another intervention during the study period.		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	SmartMobiel	
	Rationale/theory/Goal	Main goal was to stimulate participants' awareness, ability factors (i.e., action plans and goal action), and self-efficacy to engage in more PA. The intervention consisted of 5 successive rounds.	
	Materials used	Internet, computer and mobile phone	
	Procedures used		
	Provider	Solely device driven and automated feedback	
	Digital platform	eHealth condition was delivered via email, and the mHealth condition was delivered via SMS	
	Location	Dutch online research panel	
	Duration	Data collected at 5 points in time (baseline, after 1 week, after 2 weeks, after 3 weeks, and after 6 months).	
	Intensity	***Round 1 Feedback: Messages 1-3*** Started with a baseline questionnaire used as input for the 3 tailored PA feedback messages, sent 2 days apart. Main aim of this first round was to inform participants how to successfully plan behaviour change regarding physical activity. ***Round 2 Feedback: Messages 4-6*** Respondents received a 2nd questionnaire 1 week after baseline. Main aim of this round was to give participants an overview of their PA level and ideas about how to overcome difficulties regarding their behaviour change. In this round, 3 tailored feedback messages were sent (message 4, 5, and 6). ***Round 3 Feedback: Messages 7-9***	

Bibliographic reference/s	**Gomez Quinonez, S , Walthouwer M J, Schulz D N, de Vries , and H (2016) mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial. Journal of medical Internet research 18(11), e278**	
Study name	mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial	
		During the third round, participants completed 2nd follow-up questionnaire. The main aim of this round was to encourage participants to act on their plans. 3 feedback messages were sent 1 day, 2 days and 5 days after the questionnaire. ***Round 4 Follow-Up Measurement and Progress Evaluation*** The post-test served as a short-term follow-up measurement ***Round 5 Final Follow-Up Measurements*** This final 6-month follow-up questionnaire assessed the effects of the intervention on physical activity, sedentary behaviour, plan enactment, planning, intention, and self-efficacy.
	Tailoring/adaptation	Participants in the eHealth and mHealth group received fully automated tailored feedback messages about their current level of physical activity. Furthermore, they received personal feedback aimed at increasing their amount of physical activity when needed.
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc
	Other details	N/A
Follow up	6 months	
Data collection	PA measured at both at baseline and at follow-up with the International Physical Activity Questionnaire (IPAQ)	
Critical outcomes measures and effect size. (time points)	Intervention effects on the total physical activity (average daily physical activity (light, moderate, and vigorous) at 6-month follow-up as assessed by linear regression analyses (multiple imputation). B – unstandardized regression coefficient The following covariates were included: baseline behaviour, sex, age, and baseline moderate and vigorous physical activity.	

Intervention	B	SE	P value	95%CI

Bibliographic reference/s	**Gomez Quinonez, S , Walthouwer M J, Schulz D N, de Vries , and H (2016) mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial. Journal of medical Internet research 18(11), e278**				
Study name	mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial				
	eHealth versus control	6.13	3.61	0.09	-0.98 to 13.23
	mHealth versus control	1.92	4.00	0.63	-5.95 to 9.79
	Intervention versus control	8.48	3.77	0.03	1.06 to 15.90
Important outcomes measures and effect size. (time points)	N/A				
Statistical Analysis	All statistical analyses were performed using IBM SPSS Statistics version 20. Multiple imputation with 25 iterations were used to replace missing values on outcome variables at baseline. Additionally, missing values on BMI and physical activity were replaced at follow up. Differences at baseline were analysed using analyses of variance (ANOVAs) with Tukey post hoc tests for continuous variables and chi-square tests with Bonferroni correction for categorical variables. Effect analyses were performed using linear regression analyses with the ENTER method and corrected for potential confounders (i.e., baseline behaviour, baseline differences, and predictors of attrition). Cohen's *d* were calculated to assess the size of the possible effects.				
Risk of bias (ROB) **Overall ROB**	**Outcome**		**Judgement (Low / High / some concerns)**		**Comments**
	Risk of bias arising from the randomisation process		Low		Randomisation present. No significant differences in baseline between the groups
	Risk of bias due to deviations from intended interventions (assignment)		Low		Blinding not feasible due to nature of intervention. Personal log in details provided for intervention so deviations unlikely.
	Risk of bias due to deviations from intended interventions (adherence)		Some concerns		Adherence (use of the intervention)

Bibliographic reference/s	**Gomez Quinonez, S , Walthouwer M J, Schulz D N, de Vries , and H (2016) mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial. Journal of medical Internet research 18(11), e278**		
Study name	mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial		
			assessed by means of a question in the follow-up questionnaire that asked participants which medium they had used for the intervention (mobile phone or tablet for mHealth and Computer for eHealth). However not possible to use the logs of the intervention to assess the medium of use. Hence, no guarantee that the self-reported answers are actually in line with the medium of use.
	Missing outcome data	Low	Overall participation rate at follow-up (T4) was 77.5%.
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no blinding)
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	N/A		

Bibliographic reference/s	**Gomez Quinonez, S , Walthouwer M J, Schulz D N, de Vries , and H (2016) mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial. Journal of medical Internet research 18(11), e278**	
Study name	mHealth or eHealth? Efficacy, Use, and Appreciation of a Web-Based Computer-Tailored Physical Activity Intervention for Dutch Adults: A Randomized Controlled Trial	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	
	Self-belief	X
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Golsteijn et al 2018

Bibliographic reference/s	**Golsteijn RHJ, Bolman C, Volders E, Peels DA, de Vries H, and Lechner L (2018) Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial. The international journal of behavioral nutrition and physical activity 15(1), 106**
Study name	Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial
Registration	Dutch Trial Register (NTR4296).
Study type	RCT
Study dates	Over 12 months (in 2015 and 2016) prostate and colorectal cancer patients and survivors were recruited from the urology and/or oncology departments of seventeen hospitals throughout the Netherlands
Objective	The current study assessed the efficacy of a computer-tailored PA intervention in (four subgroups of) prostate and colorectal cancer survivors
Country/ Setting	Netherlands
Number of participants / clusters	Prostate and colorectal cancer patients and survivors were randomized to the OncoActive intervention group (N = 249), or a usual-care waiting-list control group (N = 229).

Bibliographic reference/s	**Golsteijn RHJ, Bolman C, Volders E, Peels DA, de Vries H, and Lechner L (2018) Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial. The international journal of behavioral nutrition and physical activity 15(1), 106**			
Study name	Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial			
Attrition	Drop-out rates were very low with 4.4% (21/478) of the participants dropping out at the 3 months follow-up and 7.3% (35/478) dropping out at the 6 months follow-up.			
Participant /community characteristics.		**OncoActiv n =249**	**Control n =229**	**P value**
	Age, mean (SD)	66.55 (7.07)	66.38 (8.21)	.81
	Male n (%)	212 (85.1)	204 (89.1)	.20
	Female n (%)	37 (14.9)	25 (10.9)	
	Prostate cancer, n (%)	149 (59.8)	143 (62.5)	.34
	Colorectal, n (%)	100 (40.2)	86 (37.5)	
	During treatment, n (%)	19 (7.6)	14 (6.1)	.42
	After treatment, n (%)	230 (92.4)	215 (93.9)	
	Time since last treatment in months, M (SD)	5.64 (3.84)	5.17 (3.49)	.16
Method of allocation	Randomization was automatically performed by means of a digital randomizer after centralized registration of participants. Due to the nature of the study, it was not possible or necessary to blind participants or the researchers.			
Inclusion criteria	Cancer patients and survivors (≥18 years) diagnosed with colorectal or prostate cancer could participate in the trial if they were undergoing treatment with a curative intent, or if they successfully completed primary treatment (surgery, chemotherapy or radiation) up to one year ago. They had to be at least 6 weeks post-surgery and there were no restrictions regarding patients undergoing hormonal therapy			
Exclusion criteria	Participants with severe medical, psychiatric or cognitive illness (e.g., Alzheimer's disease, severe mobility limitations) were excluded from participation. Proficient Dutch reading and speaking skills were required for the questionnaires and for reading the tailored PA advice.			
Intervention	**TIDieR Checklist criteria**	**Details**		
	Brief Name	OncoActive intervention		
	Rationale/theory/Goal	The OncoActive intervention is a computer-tailored intervention aimed at increasing awareness, initiation and maintenance of PA in prostate and colorectal cancer patients and survivors.		
	Materials used	The content was structured in line with behavioural change theories such as the I-Change Model, Social Cognitive Theory,		

Bibliographic reference/s	**Golsteijn RHJ, Bolman C, Volders E, Peels DA, de Vries H, and Lechner L (2018) Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial. The international journal of behavioral nutrition and physical activity 15(1), 106**	
Study name	Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial	
		Transtheoretical Model, Health Belief model, goal setting theories, Health Action Process Approach, theories of self-regulation and the Precaution Adoption Process Model.
	Procedures used	The computer tailored advice was generated automatically using a message library, questionnaire data and computer-based data-driven decision rules.
	Provider	
	Digital platform	Every participant received a pedometer and access to interactive content on the website (e.g., role model videos, home exercise instruction videos, a module for goal setting using a pedometer, the option to consult a physical therapist and additional information).
	Location	
	Duration	Participants in the intervention group received computer-tailored PA advice at three time points (at baseline, after 2 months and after 3 months) both online on a secured website and on paper (by mail).
	Intensity	Not reported
	Tailoring/adaptation	The content of the first and second tailored advice was based on information gathered with the baseline questionnaire. Both the baseline (T0) and the second questionnaire (T1) provided input for the third tailored advice and allowed for the provision of ipsative feedback. The content of the advice was based on behaviour change theories and targets pre-motivational constructs (e.g., awareness, knowledge), motivational constructs (e.g., self-efficacy, attitude, intrinsic motivation), and post-motivational constructs (e.g., goal setting, action and coping planning, self-regulation)
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc
	Other details	N/A
Follow up	T0 – baseline, T1- 3 months, T2- 6 months	
Data collection	PA was measured both with questionnaires and accelerometers. Self-reported PA was measured using the validated Short Questionnaire to Assess Health Enhancing Physical Activity (SQUASH), assessing activities regarding commuting,	

Bibliographic reference/s	**Golsteijn RHJ, Bolman C, Volders E, Peels DA, de Vries H, and Lechner L (2018) Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial. The international journal of behavioral nutrition and physical activity 15(1), 106**
Study name	Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial
	household, occupation, and leisure time. Total minutes of PA were classified into light (metabolic equivalent [MET] < 3.0), moderate (MET 3.0–5.9), and vigorous (MET > 6). Minutes of moderate to vigorous PA (MVPA) were calculated by adding up total time in moderate and vigorous PA. Participants with extreme values (i.e., > 6720 min PA/week), were excluded in accordance with the SQUASH scoring manual. The SQUASH questionnaire has reasonable reliability (ρ = .58) and validity against an accelerometer (ρ = .45). Additionally, PA was measured using the ActiGraph GT3X-BT (ActiGraph, Pensacola, FL). Participants wore the accelerometer on an elastic belt on their right hip for 7 days. Data were downloaded and analyzed using ActiLife software (ActiGraph, Pensacola, FL). Measurements were considered valid if there were at least 4 days with at least 10 h of wear time per day. Non-wear periods were excluded from the analyses. HRQoL was measured with the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC QLQ-C30).
Critical outcomes measures and effect size. (time points)	Raw means of primary and secondary outcomes at baseline and 6 months (T0 and T2):

	Intervention group (Oncoactive)			Control group (UC)		
	T0 n, M (SD)	T1 n, M (SD)	T2 n, M (SD)	T0 n, M (SD)	T1 n, M (SD)	T2 n, M (SD)
SQUASH MVPA	246, 780 (721)	230 1060 (771)	222 1145 (883)	229 873 (764)	221 962 (833)	213 943 (769)
SQUASH Days ≥30 min PA	246 3.70 (2.06)	226 4.81 (1.89)	218 5.18 (1.65)	226 3.86 (2.07)	222 4.02 (2.06)	210 4.31 (1.93)
ActiGraph MVPA*	226 271 (211)	-	208 331 (234)	204 293 (229)		211 301 (219)
ActiGraph Days ≥30 min PA*	226 3.35 (2.54)		208 3.96 (2.38)	204 3.46 (2.40)		211 3.71 (2.38)
General HRQoL	246 80.0 (16.8)	229 79.8 (16.3)	223 83.8 (15.6)	229 82.1 (14.2)	222 80.7 (14.8)	216 83.7 (13.7)

*Outcomes assessed only at T2 measurement to limit participant burden at T1

Bibliographic reference/s	**Golsteijn RHJ, Bolman C, Volders E, Peels DA, de Vries H, and Lechner L (2018) Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial. The international journal of behavioral nutrition and physical activity 15(1), 106**		
Study name	Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial		
Important outcomes measures and effect size. (time points)	See above for HRQoL		
Statistical Analysis	N/A		
	Outcome name: MVPA measured objectively by ActiGraph		
Risk of bias (ROB) Overall ROB	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Some concerns	Randomisation present. No information on concealment. Most baseline characteristics equal.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	Participants or researchers not blinded, may affect subjective outcomes.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None reported.
	Missing outcome data	Low	Drop-out rates were very low with 4.4% (21/478) of the participants dropping out at the 3 months follow-up and 7.3% (35/478) dropping out at the 6 months follow-up.
	Risk of bias in measurement of the outcome	Some concerns	Outcome assessment may be affected by knowledge of intervention received (no blinding) – need to report better outcomes / social desirability bias.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	

Bibliographic reference/s	**Golsteijn RHJ, Bolman C, Volders E, Peels DA, de Vries H, and Lechner L (2018) Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial. The international journal of behavioral nutrition and physical activity 15(1), 106**	
Study name	Short-term efficacy of a computer-tailored physical activity intervention for prostate and colorectal cancer patients and survivors: a randomized controlled trial	
	Other outcome details:	MVPA measured subjectively by SQUASH: some concerns HRQoL: some concerns
Source of funding	Not reported	
Comments	N/A	
Additional references	N/A	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	X
	Social support	X
	Self-belief	X
	Comparison of outcomes	
	Identity	
	Shaping knowledge	X
	Regulation	
	Comparison of behaviour	

Greene et al 2012

Bibliographic reference/s	**Greene J, Sacks R, Piniewski B, Kil D, and Hahn JS (2013) The impact of an online social network with wireless monitoring devices on physical activity and weight loss. Journal of primary care & community health 4(3), 189-94**
Study name	The impact of an online social network with wireless monitoring devices on physical activity and weight loss
Registration	
Study type	RCT
Study dates	2010- 2011
Objective	To examine whether the users of iWell OSN had greater increases in physical activity, weight loss, and improvements in clinical indicators for people overweight or obese.

Bibliographic reference/s	**Greene J, Sacks R, Piniewski B, Kil D, and Hahn JS (2013) The impact of an online social network with wireless monitoring devices on physical activity and weight loss. Journal of primary care & community health 4(3), 189-94**		
Study name	The impact of an online social network with wireless monitoring devices on physical activity and weight loss		
Country/ Setting	USA, recruited from PeaceHealth Oregon employees and their families		
Number of participants / clusters	N=513, adults		
Attrition	N=349 completed the study, N=513 enrolled in the study Equal % of intervention and control group participants dropped out, 32% Those who stopped participating – not significantly different in bassline physical activity levels, clinical indicators, gender. On average they had higher BMI and were younger		
Participant /community characteristics	No stat sig baseline differences between the groups in terms of demographics, physical activity, weight or clinical indicators. 79% female, 60% ≥50yrs Weight; normal (6.9%), overweight (45.3%), obese (47.9%) Leisure time walking; 2005.6 mean min/wk		
Method of allocation	Randomisation and allocation not reported		
Inclusion criteria	18-79yrs, stable medication for the last 3mths, had expressed concern about their weight or health in an online screener survey.		
Exclusion criteria	Prior bariatric surgery, ≥20 pounds weight loss in the last 3mths, serious health issues		
Exclusion criteria	Not reported		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name		
	Rationale/theory/Goal	Online social networks (OSN), studies are only beginning to examine the impacts of social networks and few have taken advantage of the data collected by OSNs.	
	Materials used	Access to iWell OSN, given an accelerometer	
	Procedures used	All participants received printed lifestyle guidelines on diet and exercise during their first study visit – included a sample daily meal plan, recommended daily levels of exercise, articles about the benefits of exercise and healthy eating. Intervention group; iWell OSN access, an accelerometer to capture their physical activity or steps for upload to the iWell OSN and a wireless weight scale for uploading weight data. With iWell OSN participants could connect (friend) others in the network, send individual messages to their friends, make public postings, view their contact's postings, view their physical activity or steps,	

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Greene J, Sacks R, Piniewski B, Kil D, and Hahn JS (2013) The impact of an online social network with wireless monitoring devices on physical activity and weight loss. Journal of primary care & community health 4(3), 189-94</td></tr>
<tr><td>Study name</td><td colspan="2">The impact of an online social network with wireless monitoring devices on physical activity and weight loss</td></tr>
<tr><td rowspan="9"></td><td></td><td>views their weight, and complete against others in the network on the number of steps walked or run. Also allowed the setting of individual health related goals and to receive motivational messages.

Control group;</td></tr>
<tr><td>Provider</td><td></td></tr>
<tr><td>Digital platform</td><td></td></tr>
<tr><td>Location</td><td>USA</td></tr>
<tr><td>Duration</td><td>6months</td></tr>
<tr><td>Intensity</td><td>iWell OSN combined an online platform for social networking with an accelerometer and a weight scale that both wirelessly uploaded data for tracking over time.</td></tr>
<tr><td>Tailoring/adaptation</td><td></td></tr>
<tr><td>Planned treatment fidelity</td><td></td></tr>
<tr><td>Actual treatment fidelity</td><td></td></tr>
<tr><td>Other details</td><td></td></tr>
<tr><td>Follow up</td><td colspan="2">6mths</td></tr>
<tr><td>Data collection</td><td colspan="2">3mths and 6mths</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Physical activity via validated self-report measure – Short Questionnaire to Assess Health-Enhancing Physical Activity (SQUASH) (25% of participants failed to complete SQUASH surveys)
N=180 (intervention), N=169 (control)
<table>
<tr><td></td><td>Baseline</td><td>3mths</td><td>6mths</td></tr>
<tr><td>Weight – intervention (lbs), N=180</td><td>188.9</td><td>184.5</td><td>183.7</td></tr>
<tr><td>Weight – control (lbs), N=169</td><td>190.3</td><td>189.4</td><td>188.7</td></tr>
<tr><td>Physical activity – intervention, N=137</td><td>2005.9</td><td>2479.3</td><td>2686.9</td></tr>
<tr><td>Physical activity – control, N=125</td><td>1950.5</td><td>2102.4</td><td>2248.2</td></tr>
<tr><td>Leisure time walking – intervention (min/wk), N=137</td><td>129.2</td><td>354.1</td><td>341.0</td></tr>
<tr><td>Leisure time walking – control (min/wk), N=125</td><td>141.7</td><td>160.4</td><td>208.6</td></tr>
</table>
Change from baseline significantly different between intervention and control (p<0.01);
- Weight at 3mths and 6mths
- Leisure time walking at 3mths and 6mths</td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td>Greene J, Sacks R, Piniewski B, Kil D, and Hahn JS (2013) The impact of an online social network with wireless monitoring devices on physical activity and weight loss. Journal of primary care & community health 4(3), 189-94</td></tr>
<tr><td>Study name</td><td>The impact of an online social network with wireless monitoring devices on physical activity and weight loss</td></tr>
<tr><td></td><td>Data on triglycerides, LDL, HDL not extracted

Number of messages sent by participants in the intervention group;
- Positively related to changes in leisure time walking (N=130), 24.7 min/wk, p<0.05
- Negatively related to changes in weight change (N=174), -0.6lbs, p<0.01

Frequency of physical activity
<table>
<tr><td></td><td>Baseline</td><td>3mths</td><td>6mths</td></tr>
<tr><td>All physical activity – intervention (min/wk)</td><td>2055.9</td><td>2479.3</td><td>2686.9</td></tr>
<tr><td>All physical activity – control (min/wk)</td><td>1950.5</td><td>2102.4</td><td>2248.2</td></tr>
</table>
Change from baseline significantly different between intervention and control (p<0.05)

Data on commuting, activities at work, household activities, and a breakdown of leisure time groups not extracted</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td></td></tr>
<tr><td>Statistical Analysis</td><td>Analysis of the sample that completed the study (N=349), ITT analysis stated to have been consistent with the primary analysis.
Regression models to examine the relationship between the intervention and increases in leisure time walking and weight loss.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low</td><td>Randomisation present by computer. There were no statistically significant differences of baseline characteristics</td></tr>
<tr><td>Risk of bias due to deviations from intended interventions (assignment)</td><td>Some concerns</td><td>No information on blinding</td></tr>
<tr><td>Risk of bias due to deviations from intended interventions (adherence)</td><td>Low</td><td>None reported</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Greene J, Sacks R, Piniewski B, Kil D, and Hahn JS (2013) The impact of an online social network with wireless monitoring devices on physical activity and weight loss. Journal of primary care & community health 4(3), 189-94**		
Study name	The impact of an online social network with wireless monitoring devices on physical activity and weight loss		
	Missing outcome data	Low	A total of 349 people, or 68%, participated for the full 6 months and are included in the analysis. Equal percentages of intervention and control group participants dropped out of the study (32%)
	Risk of bias in measurement of the outcome	Some concerns	None blinding may have resulted in some bias of results.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding	Funded by SK Telecom Americas		
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning		X
	Social support		X
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		

Bibliographic reference/s	**Greene J, Sacks R, Piniewski B, Kil D, and Hahn JS (2013) The impact of an online social network with wireless monitoring devices on physical activity and weight loss. Journal of primary care & community health 4(3), 189-94**
Study name	The impact of an online social network with wireless monitoring devices on physical activity and weight loss
	Regulation
	Comparison of behaviour

Haapala et al 2009

Bibliographic reference/s	**Haapala Irja, Barengo Noel C, Biggs Simon, Surakka Leena, and Manninen Pirjo (2009) Weight loss by mobile phone: a 1-year effectiveness study. Public health nutrition 12(12), 2382-91**
Study name	Weight loss by mobile phone: a 1-year effectiveness study
Registration	
Study type	RCT, adults
Study dates	June 2001 to June 2002
Objective	To investigate the effectiveness of a programme providing minimal advice and no counselling but a maximum possibility for user-initiated contact and connectedness via text messaging in people overweight or obese.
Country/ Setting	Finland
Number of participants / clusters	N=125, healthy, overweight, adults
Attrition	Discontinued intervention; - Intervention group, N=17 (27%) - Control group, N=22 (35%)
Participant /community characteristics	At baseline, no difference in background characteristics or body weight, percentage weight loss, waist circumference, self-efficacy in dieting, energy-dense food score

	Intervention, N=62	Control, N=62
Age, yrs, mean (SD)	38.1 (4.7)	38.0 (4.7)
Weight, kg, mean (SD)	87.5 (12.6)	86.4 (12.5)
BMI, kg/m^2, mean (SD)	30.6 (2.7)	30.4 (2.8)
Waist circumference, cm, mean (SD)	98.5 (10.3)	96.6 (10.4)
Female, N (%)	49 (79%)	47 (76%)

Method of allocation	Recruited via newspaper adverts and telephone screening. Study nurse blinded to randomisation. Randomisation within gender, no further details		
Inclusion criteria	25-44yrs, BMI 25-36 kg/m^2		
Exclusion criteria	Chronic disease, major psychiatric disease, no current or planned pregnancy		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**

Bibliographic reference/s	**Haapala Irja, Barengo Noel C, Biggs Simon, Surakka Leena, and Manninen Pirjo (2009) Weight loss by mobile phone: a 1-year effectiveness study. Public health nutrition 12(12), 2382-91**	
Study name	Weight loss by mobile phone: a 1-year effectiveness study	
	Brief Name	Weight Balance programme
	Rationale/theory/Goal	Theoretical model into educational behavioural interventions using new, interact media suggests that the amount, frequency and type of use of the programme (contact) influences learning effectiveness. This combined with Badura's self-efficacy theory suggest that attitudes to teletechnology and perceptions of personal self-efficacy in dieting will influence contact and the use made of the programme and thereby may affect weight loss. External life-events and circumstances would exert an additional influence.
	Materials used	
	Procedures used	
	Provider	
	Digital platform	No specific diet/exercise instructions given to either group. Self-directed dieting or joining another weight-loss programme was not forbidden in either group. Intervention group; Mobile phone weight loss programme (Weight Balance). Calculated daily energy requirements and physical activity coefficients. The programme sent a text indicating the percentage dieters had reached for the day's target weight; the extent to which they had reached their daily weight goal; the amount of food to be consumed in proportion to the subject's normal diet, as a fraction, percentage and as energy. Encouraged an increase in daily activity and emphasised the need for regular weight reporting, via text messaging or website Allowed to set their target weight as a short- or long-term goal and adjust it at every 3mth visit Control group; No intervention (offered the weight-loss programme free after the 12mth visit)
	Location	Finland

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Haapala Irja, Barengo Noel C, Biggs Simon, Surakka Leena, and Manninen Pirjo (2009) Weight loss by mobile phone: a 1-year effectiveness study. Public health nutrition 12(12), 2382-91</td></tr>
<tr><td>Study name</td><td colspan="2">Weight loss by mobile phone: a 1-year effectiveness study</td></tr>
<tr><td rowspan="6"></td><td></td><td></td></tr>
<tr><td>Duration</td><td></td></tr>
<tr><td>Intensity</td><td>Daily</td></tr>
<tr><td>Tailoring/adaptation</td><td></td></tr>
<tr><td>Planned treatment fidelity</td><td></td></tr>
<tr><td>Actual treatment fidelity</td><td></td></tr>
<tr><td>Follow up</td><td colspan="2">12mths (to ensure objectivity and validity of weight loss, experimental group invited to study centre at 3mth intervals)</td></tr>
<tr><td>Data collection</td><td colspan="2"></td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">In the intervention group those who withdrew did not significantly differ on background variables – they lost less weight at 3mths than those who continued (1.0% (SD 3.4) vs 5.3% (SD 3.5), p<0.0001)

Overweight healthy adults
<table>
<tr><td></td><td>Baseline, mean (SD)</td><td>12mths, mean (SD)</td></tr>
<tr><td>Body weight (kg), intervention (N=42)</td><td>86.6 (12.7)</td><td>82.1 (14.1)</td></tr>
<tr><td>Body weight (kg), control (N=40)</td><td>85.1 (12.5)</td><td>84.0 (13.2)</td></tr>
<tr><td>% weight loss, intervention (N=42)</td><td></td><td>5.4 (5.8)</td></tr>
<tr><td>% weight loss, control, (N=40)</td><td></td><td>1.3 (6.5)</td></tr>
<tr><td>Waist circumference, cm, intervention (N=42)</td><td>97.6 (10.5)</td><td>91.3 (11.7)</td></tr>
<tr><td>Waist circumference, cm, control (N=40)</td><td>95.7 (10.9)</td><td>93.3 (11.1)</td></tr>
<tr><td>Self-efficacy in dieting, intervention (N=40)</td><td>7.0 (1.1)</td><td>6.4 (1.7)</td></tr>
<tr><td>Self-efficacy in dieting, control (N=40)</td><td>7.0 (1.0)</td><td>6.6 (1.4)</td></tr>
<tr><td>Energy dense food score, intervention (N=41)</td><td>2.9 (0.6)</td><td>2.6 (0.6)</td></tr>
<tr><td>Energy dense food score, control (N=40)</td><td>2.7 (0.7)</td><td>2.6 (0.7)</td></tr>
</table>
Body weight;
- By 12mths weight loss in experimental group 4.5kg (SD 5.0), t=5.8, p<0.0001; control group 1.1 (SD 5.8), t=1.2, p=0.247

(also reported but not extracted; 3mth outcomes)</td></tr>
</table>

Bibliographic reference/s	**Haapala Irja, Barengo Noel C, Biggs Simon, Surakka Leena, and Manninen Pirjo (2009) Weight loss by mobile phone: a 1-year effectiveness study. Public health nutrition 12(12), 2382-91**		
Study name	Weight loss by mobile phone: a 1-year effectiveness study		
Important outcomes measures and effect size. (time points)			
Statistical Analysis	Chosen sample size (156) allowed for 20% ineligible and 30% attrition rate to give a sample to detect large effects (0.40) with α=0.05, power 0.80 in a 2-treatment group x2 repeated measures. ITT analysis Bivariate correlation and linear regression to assess the relationship between contact with the programme and background, process and outcome variables.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation sequence computer generated. No difference in baseline characteristics.
	Allocation concealment	Low risk	Randomisation performed by independent researcher.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	The study nurse was blind to the randomization procedure.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	None reported.
	Missing outcome data	Low risk	High follow up rates
	Risk of bias in measurement of the outcome	Some concerns	Self-reported measures
	Risk of bias in selection of the reported result	Low risk	All outcomes reported in protocol reported in study.
	Other sources of bias	Some concerns	
Source of funding	Partly funded by GeraCap Invia Ltd, author received consultation fee from GeraCap Invia Ltd, producer of Weight Balance©		
Comments			
Additional references			
	Scheduled consequences		

Bibliographic reference/s	Haapala Irja, Barengo Noel C, Biggs Simon, Surakka Leena, and Manninen Pirjo (2009) Weight loss by mobile phone: a 1-year effectiveness study. Public health nutrition 12(12), 2382-91	
Study name	Weight loss by mobile phone: a 1-year effectiveness study	
Behaviour change techniques (16 theoretical clusters)	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Haggerty et al 2017

Bibliographic reference/s	Haggerty AF, Hagemann A, Barnett M, Thornquist M, Neuhouser ML, Horowitz N, Colditz GA, Sarwer DB, Ko EM, and Allison KC (2017) A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors. Obesity (Silver Spring, and Md.) 25 Suppl 2, S102-S108
Study name	A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors
Registration	ClinicalTrials.gov identifier NCT02466061.
Study type	RCT, women adults
Study dates	
Objective	The aim of this study was to test the efficacy of technology-based weight loss interventions for endometrial cancer (EC) survivors with obesity.
Country/ Setting	Three clinical sites participated in the trial: the Perelman School of Medicine at the University of Pennsylvania, Washington University School of Medicine, and the Dana Farber Cancer Institute at Harvard University. Women with a history of EC scheduled for follow up visits in the gynaecologic oncology clinic at each site were identified via electronic medical records
Number of participants / clusters	41 women randomised at baseline, 32 completed follow up at 6 months assessment. 14 subjects in the telemedicine intervention group (not extracted), 13 in the text-message group and 15 in the enhanced usual care group.
Attrition	A total of 196 women (Wash U599, Penn590, Harvard57) completed the ECQ. Of those, 41 were eligible (Wash U531, Penn510), agreed to participate in the

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Study name	A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors		
	intervention, and were randomized 1:1:1 to one of the three arms for the 6-month weight loss intervention; 32 women completed the 6-month final assessment.		
Participant /community characteristics.	For the 196 women completing the ECQ at baseline, mean age was 62.2 (SD58.7) years old. They were 78% white, 20% black, 2% Latina, and 2% other/declined to answer. From electronic medical record review, they had a mean BMI of 39.1 kg/m2 (range: 30-67 kg/m^2).		
Method of allocation	Survey participants who met eligibility for and desired to participate in the intervention trial were randomized 1:1:1 in clinic by random envelope selection by a trained research assistant into the following three arms: telemedicine, text-message group and enhanced usual care (only data on the text message intervention and enhanced usual care is extracted).		
Inclusion criteria	English-speaking women 18 years of age or older with biopsy-proven EC and a BMI>30 kg/m^2 were recruited to participate first in a survey study focusing on this patient population's knowledge of the link between obesity and cancer, their technology access, and their desire for weight management. Further inclusion criteria for patients interested in the randomized intervention included no concurrent cytotoxic chemotherapy, radiation therapy, or further planned treatment; no evidence of active EC as determined by physician evaluation prior to randomization; Eastern Cooperative Oncology Group performance status 0-1; life expectancy of at least 1 year; and access to either wireless internet or a smartphone.		
Exclusion criteria	Exclusion criteria for the intervention included current or recent participation in a weight loss program or use of weight loss medications (history of bariatric surgery was not specifically excluded); uncontrolled serious medical or psychiatric condition(s) that would affect the patient's ability to participate in the interventional study invasive malignancy other than EC or nonmelanoma skin cancer that required active treatment currently or within the last 5 years; or current pregnancy.		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	The content was developed by SanTech, Inc. (Text4Diet).	
	Rationale/theory/Goal		
	Materials used		
	Procedures used	Subjects received a conventional scale (Eat Smart Precision Digital Scale) and provided their weight as prompted once weekly via text message. Messages were sent that provided feedback, support,	

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Study name	A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors	
		prompting, quiz items, and strategies to adhere to behaviours associated with long-term weight management. For example, in a given day, they may receive a physical activity tip, an eating pace multiple-choice question, and a fun fact about nutrition. Participants were encouraged to meet the same calorie and exercise goal as that of the telemedicine cohort (calorie goals of 1,200 to 1,500 kcal/d if they weighed<250 pounds and 1,500 to 1,800 kcal/d if they weighed>250 pounds at baseline. They also had an exercise goal starting at 50 minutes per week, increasing to 175 minutes per week of moderate physical activity, e.g., brisk walking). They were required to record all food and beverage intake on paper or through www.MyFitnessPal.com
	Provider	
	Digital platform	Messages were delivered in the same way to all participants through the Sense Health platform
	Location	
	Duration	6 months
	Intensity	Participants received three to five personalized and interactive text messages daily
	Tailoring/adaptation	Subjects provided their weight once by weekly text message so the feedback may have been tailored based on this as according to the methods feedback was ‘personalised’.
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	In the ‘Enhanced usual care group’ Participants were provided with 1- to 3-page handouts on 14 topics, including healthy eating, exercise, and behavioural eating strategies from materials provided on the American Cancer Society’s website. These materials encouraged weight loss through calorie counting, recording dietary intake, engaging in a

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Study name	A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors
	walking program, and using portion control strategies. No specific calorie or physical activity goals were prescribed, and these recommendations were not reinforced or monitored by study staff
Follow up	
Data collection	Clinical measures: For those randomized to the intervention, anthropomorphic measures were taken at baseline assessment and treatment end (6 months), and participants' medical and reproductive histories were collected. Body weight was measured using a calibrated digital scale. Height was measured using a stadiometer, and waist circumference was measured according to the WHO Physical Measurements Guidelines. PA: physical activity measured with the International Physical Activity Questionnaire Short Form (IPAQ).
Critical outcomes measures and effect size. (time points)	**Change (median, interquartile range) across intervention arms from baseline to 6 months:**

	Text4diet (n=11)	**Enhanced usual care (n=10)**	**P value**
Weight change (kg); % total weight loss	24.4 (27.9 to 1.1); 23.9%	21.8 (25.2 to 20.5); 23.3%	NS
Waist circumference change (cm)	25.9 (210.5 to 2.6)	24.0 (213.2 to 0.5)	NS
Walking activity (METs/wk; IPAQ)	430.7 (132.0 to 594.0)	24.8 (2198.0 to 429.0)	0.022
Total PA (METs/wk; IPAQ)	588.0 (88.0 to 931.2)	1,454.5 (619.9 to 2,655.4)	0.046
Vigorous PA (METs/wk; IPAQ)	0 (0.0 to 480.0)	1,120.0 (0.0 to 1,840.0)	

Important outcomes measures and effect size. (time points)	N/A
Statistical Analysis	The primary analysis for the intervention study was assessment of weight loss in each of the two intervention groups as compared to that of the EUC group. Examination of weight loss between the two intervention groups was also conducted. Secondary analyses included examination of changes of other body composition measures and psychosocial scales among the three study arms. For these analyses, variables indicating change between time points were calculated for each measure by subtracting the baseline measurement from the 6-month assessment. Analyses were restricted to participants with measurements at both time points, and due to the small sample size,

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Study name	A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors		
	nonparametric tests were used. Exact Wilcoxon rank sum tests were conducted to assess pair-wise differences between groups. Spearman rank correlation coefficients were computed to quantify associations of weight loss with change in psychosocial measures, in an analysis combining participants from the three arms. All statistical analyses were performed using SAS version 9.4		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Some concerns	Randomisation present. There were no statistically significant differences between the intervention and control participants at baseline for age, BMI, activity levels, or self-efficacy. However only female participants were recruited.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Blinding not feasible due to nature of intervention. To control for a potential diffusion effect (i.e. contamination from intervention group to control group), participants from the same department and/or work area were randomly assigned as a group to either the intervention or control groups.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None reported
	Missing outcome data	Low	The attrition rate was 10% for the intervention group and 22% for the control group at 24 weeks. No difference in age, BMI, baseline step counts, or self-efficacy scores between participants

Bibliographic reference/s	**Haggerty AF, Hagemann A, Barnett M, Thornquist M, Neuhouser ML, Horowitz N, Colditz GA, Sarwer DB, Ko EM, and Allison KC (2017) A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors. Obesity (Silver Spring, and Md.) 25 Suppl 2, S102-S108**		
Study name	A Randomized, Controlled, Multicenter Study of Technology-Based Weight Loss Interventions among Endometrial Cancer Survivors		
			who dropped out and those who completed the study.
	Risk of bias in measurement of the outcome	Some concerns	None reported, objective outcome measure.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	Any other publications which have contributed evidence to this data extraction for the study		
Behaviour change techniques (16 theoretical clusters	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief	X	
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		
	Comparison of behaviour		

Hansen et al 2012

Bibliographic reference/s	**Hansen Andreas Wolff, Gronbaek Morten, Helge Jorn Wulff, Severin Maria, Curtis Tine, and Tolstrup Janne Schurmann (2012) Effect of a Web-based intervention to promote physical activity and improve health among physically inactive adults: a population-based randomized controlled trial. Journal of medical Internet research 14(5), e145**		
Study name	Effect of a Web-Based Intervention to Promote Physical Activity and Improve Health Among Physically Inactive Adults: A Population-Based Randomized Controlled Trial		
Registration	Clinicaltrials.gov NCT01295203		
Study type	RCT, adults		
Study dates	The intervention study was nested in the Danish Health Examination Survey 2007-2008 (DANHES), a nationwide health study in Denmark. DANHES was carried out in 13 municipalities in 2007-2008		
Objective	To examine whether access to a website with individually tailored feedback and suggestions on how to increase PA led to improved PA, anthropometrics, and health measurements		
Country/ Setting	Denmark		
Number of participants / clusters	Physically inactive adults (n = 12,287) participating in a nationwide eHealth survey and health examination in Denmark were randomly assigned to either an intervention (website) (n = 6055) or a no-intervention control group (n = 6232) in 2008		
Attrition	A total of 12,287 participants were enrolled in the study, resulting in a 43.80% participation rate. The response rates in the 3-month questionnaire were 57.55% (2375/4127) in the intervention group and 66.41% (2175/3257) in the website group.		
Participant /community characteristics.		Website group (n = 6055)	Control group (n = 6232)
	Age, mean (SD)	50.7 (13.6)	50.4 (13.7)
	Sex, women (%)	3924 (64.8%)	3924 (64.8%)
Method of allocation	If willing to participate, each participant was randomly assigned by the registration program to either an intervention (website) or a no-intervention control group. The only incentive given to participants was the possibility of being assigned to the intervention group. Blinding was not feasible.		
Inclusion criteria	Being physically inactive during leisure time. This was defined by the participants' answer to a 4-category question describing PA level in leisure time. We included participants in the lowest 2 categories, mostly sedentary or light activities.		
Exclusion criteria	Participants were excluded in the highest categories of PA: moderate and vigorous PA. Further exclusion criteria were presence of serious heart problems, not being able to perform everyday activities, or missing values in the International Physical Activity Questionnaire (IPAQ) and the leisure-time PA question.		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**

Bibliographic reference/s	**Hansen Andreas Wolff, Gronbaek Morten, Helge Jorn Wulff, Severin Maria, Curtis Tine, and Tolstrup Janne Schurmann (2012) Effect of a Web-based intervention to promote physical activity and improve health among physically inactive adults: a population-based randomized controlled trial. Journal of medical Internet research 14(5), e145**	
Study name	Effect of a Web-Based Intervention to Promote Physical Activity and Improve Health Among Physically Inactive Adults: A Population-Based Randomized Controlled Trial	
	Brief Name	
	Rationale/theory/Goal	The intervention website was founded on the theories of stages of change and of planned behaviour.
	Materials used	The website was structured as three major parts: (1) a personal page, which included individually tailored PA advice and a personal profile, (2) a page with training programs and general recommendations, and (3) a forum and discussion page for questions from participants.
	Procedures used	
	Provider	
	Digital platform	Website, internet
	Location	
	Duration	Not reported
	Intensity	Not reported
	Tailoring/adaptation	The individually tailored PA advice consisted of three parts: (1) a general introduction, (2) normative feedback, which related the participant's PA to the current PA recommendations and (3) general advice about using the tools on the website. Normative feedback was based on the summarized PA time from the participant's answers in the IPAQ. Feedback given in the domains of everyday activity, fitness training, and strength training in which participants received tailored feedback according to their level of PA. All participants were encouraged to make a personal profile to set their goals, monitor their progress, and implement their goals.
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc
	Other details	N/A
Follow up	6 months	
Data collection	Long version of the IPAQ was used to collect data, which is known to be a valid and reliable instrument for assessing PA, both at baseline and at follow-up. Consists of 31 items that collect information on PA in the 4 domains work, transport, housework and gardening, and leisure time.	

<table>
<tr><td>Bibliographic reference/s</td><td>Hansen Andreas Wolff, Gronbaek Morten, Helge Jorn Wulff, Severin Maria, Curtis Tine, and Tolstrup Janne Schurmann (2012) Effect of a Web-based intervention to promote physical activity and improve health among physically inactive adults: a population-based randomized controlled trial. Journal of medical Internet research 14(5), e145</td></tr>
<tr><td>Study name</td><td>Effect of a Web-Based Intervention to Promote Physical Activity and Improve Health Among Physically Inactive Adults: A Population-Based Randomized Controlled Trial</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Physical activity assessed by International Physical Activity Questionnaire (min/week) at 6-month follow-up by website and control group, intention-to-treat analysis:

Values shown as median (25th-75th percentile)
<table>
<tr><td>Type of PA</td><td>Website (n=4435)</td><td>Control (n=4509)</td><td>P value</td></tr>
<tr><td>Work</td><td>60 (0-800)</td><td>60 (0-825)</td><td>.62</td></tr>
<tr><td>Transportation</td><td>180 (45-400)</td><td>200 (60–420)</td><td>.62</td></tr>
<tr><td>Household</td><td>480 (180–1080)</td><td>480 (180–1080)</td><td>.17</td></tr>
<tr><td>Leisure time</td><td>200 (60–450)</td><td>200 (60–420)</td><td>.25</td></tr>
<tr><td>Sitting</td><td>2220 (1500–3060)</td><td>2220 (1500–3150)</td><td>.52</td></tr>
<tr><td>Total PA</td><td>1575 (845–2580)</td><td>1560 (840–2520)</td><td>.25</td></tr>
</table>
Use of the intervention website at 6 months follow up in the website group:
<table>
<tr><td>How often did you use the website during the last 6 months? (n=3159)?</td><td>N</td><td>%</td></tr>
<tr><td>I have not logged on to the website</td><td>2243</td><td>71</td></tr>
<tr><td>I have logged on to the website once</td><td>694</td><td>22</td></tr>
<tr><td>I have logged on to the website several times</td><td>159</td><td>5</td></tr>
<tr><td>have logged on to the website several times and made a personal profile</td><td>63</td><td>2</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>N/A</td></tr>
<tr><td>Statistical Analysis</td><td>IPAQ results analysed according to the Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire with the exception that we included participants with a missing value in day or time in the follow-up analysis. Results were primarily analysed as intention-to-treat analyses with the use of the last observation carried forward to account for missing data at follow-up. We analysed completer data including only participants who completed the follow-up health examination or questionnaire.
Website use was assessed by the follow-up questionnaire and combined with information provided by the company that was responsible for the website, which recorded whether a participant logged on.</td></tr>
<tr><td></td><td>Outcome</td><td>Judgement (Low / High /</td><td>Comments</td></tr>
</table>

Bibliographic reference/s	**Hansen Andreas Wolff, Gronbaek Morten, Helge Jorn Wulff, Severin Maria, Curtis Tine, and Tolstrup Janne Schurmann (2012) Effect of a Web-based intervention to promote physical activity and improve health among physically inactive adults: a population-based randomized controlled trial. Journal of medical Internet research 14(5), e145**		
Study name	Effect of a Web-Based Intervention to Promote Physical Activity and Improve Health Among Physically Inactive Adults: A Population-Based Randomized Controlled Trial		
Risk of bias (ROB)		**some concerns)**	
Overall ROB	Risk of bias arising from the randomisation process	Low	Randomisation present. No information on concealment. Baseline characteristics did not differ significantly between the website and control groups.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Blinding was not feasible.
	Risk of bias due to deviations from intended interventions (adherence)	Low	A technical error gave some participants in the control group access to the website and resulted in exclusion of 895 participants however this was before randomisation.
	Missing outcome data	Some concerns	>20% loss to follow up in each arm. The power was not achieved
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no information on blinding).
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments			
Additional references	N/A		
Behaviour change techniques (16	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		

Bibliographic reference/s	**Hansen Andreas Wolff, Gronbaek Morten, Helge Jorn Wulff, Severin Maria, Curtis Tine, and Tolstrup Janne Schurmann (2012) Effect of a Web-based intervention to promote physical activity and improve health among physically inactive adults: a population-based randomized controlled trial. Journal of medical Internet research 14(5), e145**	
Study name	Effect of a Web-Based Intervention to Promote Physical Activity and Improve Health Among Physically Inactive Adults: A Population-Based Randomized Controlled Trial	
theoretical clusters)	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	
	Social support	X
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	X
	Regulation	
	Comparison of behaviour	

Hutchesson et al 2018

Bibliographic reference/s	**Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),**
Study name	A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial
Registration	
Study type	RCT, adults, women
Study dates	Recruitment March-April 2015
Objective	To investigate the efficacy of the 6mth BPBH programme on body weight in people overweight or obese.
Country/ Setting	Australia
Number of participants / clusters	N=57
Attrition	N=14
Participant /community characteristics	

	Intervention, N=29	Control, N=28
Age (mean (SD))	26.3±4.3	27.9±5.0
Weight, kg, N (%)	79.8 (10.0)	79.2 (10.3)

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),</td></tr>
<tr><td>Study name</td><td colspan="3">A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial</td></tr>
<tr><td></td><td colspan="3">
<table>
<tr><td>BMI, N (%)</td><td>29.3 (2.5)</td><td>29.4 (2.5)</td></tr>
<tr><td>Waist circumference, cm, N (%)</td><td>88.8 (9.0)</td><td>88.2 (8.0)</td></tr>
<tr><td>Physical activity (moderate-vigorous physical activity), mins/wk</td><td>243 (268)</td><td>167 (164)</td></tr>
<tr><td>Sitting time, mins/day</td><td>567 (217)</td><td>579 (227)</td></tr>
</table>
BMI; overall 56.1% overweight, 43.9% obese
Average 208min/wk in moderate to vigorous activity (approx. 30min/day) and 573 min/day sitting
</td></tr>
<tr><td>Method of allocation</td><td colspan="3">Allocation sequence generated by computer-based random number algorithm, produced individual group allocation in block lengths of 6, stratified by BMI (overweight, obese). Researcher not involved prepared concealed envelopes, these were distributed by a researcher not involved in data collection</td></tr>
<tr><td>Inclusion criteria</td><td colspan="3">18-35yrs, female, BMI 25-34.9km/m^2</td></tr>
<tr><td>Exclusion criteria</td><td colspan="3">Pregnant/breastfeeding, in another weight loss programme, taking medications that cause weight gain, metabolic disorder, eating disorder, other medical condition where weight loss may compromise health, weight loss ≥5% last 3mths</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Paper/Location</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td></td><td></td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td colspan="2">Social cognitive theory and control theory theoretical frameworks</td></tr>
<tr><td></td><td>Materials used</td><td></td><td></td></tr>
<tr><td></td><td>Procedures used</td><td></td><td></td></tr>
<tr><td></td><td>Provider</td><td></td><td></td></tr>
<tr><td></td><td>Digital platform</td><td></td><td></td></tr>
<tr><td></td><td>Location</td><td colspan="2">USA</td></tr>
<tr><td></td><td>Duration</td><td></td><td></td></tr>
<tr><td></td><td>Intensity</td><td colspan="2">Intervention group;
BPBH programme;
Overall 6mth weight loss delivered via e-Health technologies, 5 delivery modes (website, app, text messages, social media)

Website –
- advice on weight loss, healthy eating and physical activity, 10 steps to success,
- online quiz with individualised email feedback in wk1 to assess current</td></tr>
</table>

Bibliographic reference/s	**Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),**	
Study name	A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial	
		weight, motivations, weight loss readiness and behaviours of the 10 steps to success - received automated personalised email feedback from their accredited practicing dietician (APD) focussing on: setting a realistic weight loss goal, energy requirements for weight loss, their current eating behaviours and physical activity levels compared to the 10 steps for success - weight and behaviour change goals for recorded in wk1 after receipt of email feedback - follow-up online quizzes (wks 3, 8, 12, 20) monitored progress towards goals, dietician provides automated personalised email feedback including virtual rewards self-monitoring app (Easy Diet Diary); - to record weight, energy intake, energy expenditure goals, and to self-monitor weight, food intake and physical activity. Provided automated feedback on nutrient content of food and energy expended from exercises, cumulative daily totals compared to goals email newsletters; - email newsletters and text messages – provided tips to achieve and maintain 10 steps to success and reminding about other programme tasks. Wks 1-12, newsletters x1/wk, text messages x2/wk; wks 13-26, newsletters x1/2wks, text messages x1/wk social media; - dynamic content about 10 steps to success, created social network. X3 posts/wk from APD. 1 reminder post on wks other tasks were to be completed Waiting list control;

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),</td></tr>
<tr><td>Study name</td><td colspan="2">A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial</td></tr>
<tr><td rowspan="4"></td><td></td><td>Instructed to continue usual eating and physical activity habits, received access to BPBH programme components after 6mths</td></tr>
<tr><td>Tailoring/adaptation</td><td>Automated personalised email feedback focussing on setting realistic weight loss goal, energy requirements, eating behaviours, physical activity levels</td></tr>
<tr><td>Planned treatment fidelity</td><td></td></tr>
<tr><td>Actual treatment fidelity</td><td></td></tr>
<tr><td>Follow up</td><td colspan="2">6mths</td></tr>
<tr><td>Data collection</td><td colspan="2">Assessment sessions were held at the University of Newcastle, NSW, Australia, and conducted by trained, blinded assessors at baseline and after six months. All participants fasted (minimum 8 h, maximum 12 h) prior to their assessment session. Questionnaires were completed online either prior to or during the assessment sessions. Participants who were unable to attend assessment sessions in person at six months were invited to complete the online survey and provide a self-reported weight.

The primary outcome measure was weight change (kg) from baseline to 6 months. Weight
was measured to 0.01 kg in light clothing without shoes on a digital scale (Inbody 720, Inbody Australia, Miami, QLD, Australia). BMI was calculated using the standard equation (weight (kg)/height (m)2). An online survey assessed physical activity, sitting time, dietary intake and quality of life. Minutes/week of moderate to vigorous activity was assessed using the Godin Leisure Time Exercise Questionnaire [24]. Total, weekday and weekend sitting time/day were assessed using the Domain-Specific Sitting Time Questionnaire [25]. Total energy intake and percentage energy/day contributed by alcohol, take-away foods, fruit, vegetables, nutrient-dense healthy foods and energy-dense, nutrient-poor (EDNP) foods, as well as total grams/day of fruit, vegetables and alcohol were assessed using the 120-item semi-quantitative Australian Eating Survey Food Frequency Questionnaire</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Results;
<table>
<tr><td></td><td>Mean change at 6mths control</td><td>Mean change at 6mths, intervention</td><td>Mean difference (95%CI)</td><td>P value</td></tr>
<tr><td>Weight kg (self-report)</td><td>0.01 (-1.69 to 1.70)</td><td>-1.94 (-3.59 to -0.29)</td><td>-1.94 (-4.31 to 0.42)</td><td>0.107</td></tr>
<tr><td>Weight kg (measured)</td><td>0.55 (-1.28 to 2.37)</td><td>-2.04 (-4.07 to -0.01)</td><td>-2.59 (-5.32 to 0.14)</td><td>0.063</td></tr>
<tr><td>BMI</td><td>-0.01 (-0.57 to 0.55)</td><td>0.69 (-1.24 to -1.38)</td><td>-0.68 (-1.47 to 1.09)</td><td>0.091</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),**
Study name	A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial

Body fat, kg	0.75 (-1.00 to 2.49)	-2.36 (-4.27 to -0.44)	-3.10 (-5.69 to 0.52)	0.019
Body fat, %	0.27 (-1.29 to 1.83)	-1.73 (-3.46 to 0.003)	-2.00 (-4.33 to 0.33)	0.093
Waist circumference, cm	-3.5 (-5.1 to -1.9)	-4.9 (-6.6 to -3.1)	-1.4 (-3.8 to 1.0)	0.259
Moderate-vigorous activity, mins/wk	38 (-9 to 165)	-20 (-141 to 102	-58 (-233 to 118)	0.521
Total sitting time, mins/day	-53 (-139 to 34)	-44 (-132 to 44)	9 (-115 to 132)	0.892
Fruit, grams/day	8.83 (-21.00 to 38.67))	30.49 (1.94 to 59.03)	21.65 (-19.64 to 62.95)	0.304
Vegetable, grams/day	12.86 (-39.47 to 65.18)	54.47 (4.46 to 104.48)	41.61 (-30.77 to 113.99)	0.260
QLESQ total score	2.10 (-1.27 to 5.50)	3.27 (-0.39 to 6.59)	1.17 (-3.57 to 5.90)	0.630

QLESQ – quality of life, enjoyment and satisfaction questionnaire

Engagement (also acceptability – data not extracted)

Website;

- mean no. website visits; 52±29, range 0-135
- 72.4% (29) set and recorded goals in week 1

App;

- 58.6% used to monitor their food intake, making an average of 164±312 entries
- 44.8% used to self-monitor their weight, making an average of.6.7±11.1 entries
- 34.5% used to self-monitor their weight, making an average of 1.1±2.2 entries

Text messages;

- Sent over the 26wks of the programme, 52.4% reported reading them regularly

Facebook;

- Mean number of posts by participants 1.8±2.5

Engagement;

- All engaged with social media throughout the 6mths
- 33.3-89.6% opened email newsletters

Bibliographic reference/s	**Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),**		
Study name	A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial		
	- 89.6% accessed the website in the first week; no participants logged into the website in wks 6,11,13,17,19,23-26 - Online quiz completed by 86.2% (wk1), 41.4% (wk3), 31% (wk 8), 13.7% (wk 12and 20) (Data available but not extracted; BP, cholesterol, fruit energy/day, vegetable energy/day, alcohol, takeaway, energy from core/non-core foods, satisfaction with life scale, moderate physical activity, vigorous physical activity, sitting time weekday, sitting time weekend)		
Important outcomes measures and effect size. (time points)			
Statistical Analysis	ITT and complete cases analysis 90% power for a 3kg difference in weigh change between the two groups at 5% significance, assuming correlation between baseline and 6mths weight was 0.8, allowing 40% loss to follow-up at 6mths – recruitment target of 114 (57 per group)		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation sequence computer generated. No difference in baseline characteristics.
	Allocation concealment	Low risk	Randomisation performed by independent researcher.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	No information on blinding of subjects to groups. For self-reported subjective outcomes, lack of blinding may bias results. No deviations reported
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	None reported.
	Missing outcome data	Low risk	Low attrition rate,

Bibliographic reference/s	**Hutchesson MJ, Callister R, Morgan PJ, Pranata I, Clarke ED, Skinner G, Ashton LM, Whatnall MC, Jones M, Oldmeadow C, and Collins CE (2018) A Targeted and Tailored eHealth Weight Loss Program for Young Women: The Be Positive Be Healthe Randomized Controlled Trial. Healthcare (Basel, and Switzerland) 6(2),**		
Study name	A targeted and tailored eHealth weight loss program for young women. The Be Positive Be Healthe randomized controlled trial		
			the recruitment target of 114 participants was not met.
	Risk of bias in measurement of the outcome	Low risk	Outcome assessors were blinded.
	Risk of bias in selection of the reported result	Low risk	All outcomes reported in protocol reported in study.
	Other sources of bias	None identified	
Source of funding	Funded by a University of Newcastle New Staff Grant		
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		X
	Social support		X
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		
	Comparison of behaviour		

Jane et al 2017

<table>
<tr><td>Bibliographic reference/s</td><td colspan="4">Jane M, Hagger M, Foster J, Ho S, Kane R, and Pal S (2017) Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: A randomised controlled trial. PloS one 12(6), e0178326</td></tr>
<tr><td>Study name</td><td colspan="4">Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: a randomised controlled trial</td></tr>
<tr><td>Registration</td><td colspan="4"></td></tr>
<tr><td>Study type</td><td colspan="4">RCT, adults, 3-arm trial</td></tr>
<tr><td>Study dates</td><td colspan="4">Recruited July-Nov 2014</td></tr>
<tr><td>Objective</td><td colspan="4">To measure changes to weight and other obesity-related disease factors in overweight and obese participants with a weight management programme delivered via social media compared with written information only</td></tr>
<tr><td>Country/ Setting</td><td colspan="4">Australia</td></tr>
<tr><td>Number of participants / clusters</td><td colspan="4">N=137</td></tr>
<tr><td>Attrition</td><td colspan="4">N=68 provided data post baseline (fb, N=23, pamphlet N=23, control N=22)
N=56 completed the full intervention (fb, N=19, pamphlet N=18, control N=17)
N=67 – data used in the analysis (baseline characteristics from participants that contributed data to the analysis used)</td></tr>
<tr><td>Participant /community characteristics</td><td colspan="4"><table>
<tr><td></td><td>Control (N=21)</td><td>Pamphlet (N=23)</td><td>Facebook (N=23)</td></tr>
<tr><td>Gender (m/f)</td><td>4/17</td><td>2/21</td><td>4/19</td></tr>
<tr><td>Age, mean (SEM)</td><td>50.2 (2.4)</td><td>54.1 (2.3)</td><td>47.0 (2.3)</td></tr>
<tr><td>Weight, kg mean (SEM)</td><td>91.5 (4.5)</td><td>86.7 (4.2)</td><td>89.0 (3.2)</td></tr>
<tr><td>BMI, kg/m^2 mean (SEM)</td><td>33.3 (1.3)</td><td>32.9 (1.3)</td><td>32.5 (1.0)</td></tr>
<tr><td>Waist, cm mean (SEM)</td><td>98.0 (2.8)</td><td>96.1 (2.5)</td><td>96.3 (2.4)</td></tr>
<tr><td>Steps/day, mean (SEM)</td><td>-</td><td>8735.1 (480.8)</td><td>7567.8 (793.2)</td></tr>
<tr><td>Energy intake, kJ/day mean (SEM)</td><td>8061.1 (435.2)</td><td>8266.7 (440.1)</td><td>8023.6 (398.8)</td></tr>
</table></td></tr>
<tr><td>Method of allocation</td><td colspan="4">Randomised via block randomisation according to age and gender using online research randomising software</td></tr>
<tr><td>Inclusion criteria</td><td colspan="4">21-65yrs, BMI 25-40km/m^2, recruited via newspaper adverts</td></tr>
<tr><td>Exclusion criteria</td><td colspan="4">Smoking, lipid lowering medication, steroids, warfarin, diabetes, hypo/hyperthyroidism, cardiovascular events (last 6mths)</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td colspan="2">Paper/Location</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td colspan="3"></td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td colspan="3"></td></tr>
<tr><td></td><td>Materials used</td><td colspan="3">online social media</td></tr>
<tr><td></td><td>Procedures used</td><td colspan="3"></td></tr>
</table>

Bibliographic reference/s	**Jane M, Hagger M, Foster J, Ho S, Kane R, and Pal S (2017) Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: A randomised controlled trial. PloS one 12(6), e0178326**	
Study name	Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: a randomised controlled trial	
	Provider	Commercial site
	Digital platform	Facebook group; Instructed to follow the Total Wellbeing Diet Information as in the pamphlet group – with pages as snapshots posted within a secret fb group Access to weight management programme, encouraged to interact with each other in the group Pamphlet group; Instructed to follow the Total Wellbeing Diet Information as a booklet Both intervention groups issued with a pedometer Control group; Standard care - instructed to follow the Australian government dietary guidelines and national physical activity guidelines for adults None of the groups were given any further external weight management guidance
	Location	Australia
	Duration	24wks
	Intensity	Study coordinator posted to the fb group once a week
	Tailoring/adaptation	
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up	24wks	
Data collection		
Critical outcomes measures and	Primary outcomes; weight Secondary outcomes; BP, waist and hip measurement, fasting glucose, lipids, insulin, dietary intake, physical activity, step count	

<table>
<tr><td>Bibliographic reference/s</td><td>Jane M, Hagger M, Foster J, Ho S, Kane R, and Pal S (2017) Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: A randomised controlled trial. PloS one 12(6), e0178326</td></tr>
<tr><td>Study name</td><td>Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: a randomised controlled trial</td></tr>
<tr><td>effect size. (time points)</td><td>(3-day food records, 3-day physical activity records, 3-day step count)

Weight (% loss of initial body weight)

<table>
<tr><td></td><td>N</td><td>Mean (SE)</td><td>Compared with control</td></tr>
<tr><td>Weight</td><td></td><td></td><td></td></tr>
<tr><td>Control</td><td>17</td><td>-1.5 (0.6)</td><td></td></tr>
<tr><td>Pamphlet</td><td>18</td><td>-3.6 (0.8)</td><td>p=0.05</td></tr>
<tr><td>Facebook</td><td>19</td><td>-4.8 (1.1)</td><td>p<0.01</td></tr>
<tr><td>BMI</td><td></td><td></td><td></td></tr>
<tr><td>Control</td><td>17</td><td>-0.5 (0.2)</td><td></td></tr>
<tr><td>Pamphlet</td><td>18</td><td>-1.3 (0.3)</td><td></td></tr>
<tr><td>Facebook</td><td>19</td><td>-1.5 (0.4)</td><td>p=0.02</td></tr>
<tr><td>Waist (cm)</td><td></td><td></td><td></td></tr>
<tr><td>Control</td><td>17</td><td>-1.8 (0.9)</td><td></td></tr>
<tr><td>Pamphlet</td><td>18</td><td>-3.0 (0.8)</td><td></td></tr>
<tr><td>Facebook</td><td>19</td><td>-4.5 (1.0)</td><td>p=0.04</td></tr>
</table>
<table>
<tr><td></td><td>N</td><td>Mean (SE)</td><td></td></tr>
<tr><td>Energy intake (kJ/day)</td><td></td><td></td><td></td></tr>
<tr><td>Control</td><td>15</td><td>-1107.4 (557.4)</td><td rowspan="3">NS difference between the groups</td></tr>
<tr><td>Pamphlet</td><td>17</td><td>-1071.6 (500.3)</td></tr>
<tr><td>Facebook</td><td>17</td><td>-1465.9 (515.3)</td></tr>
<tr><td>Steps/day</td><td></td><td></td><td></td></tr>
<tr><td>Pamphlet</td><td>16</td><td>933.1 (476.0)</td><td rowspan="2">NS difference between the groups</td></tr>
<tr><td>Facebook</td><td>15</td><td>2153.5 (795.3)</td></tr>
</table>

(also reported, not extracted; week 6 and week 12 data; at week 24 not extracted; hip circumference, fasting blood glucose, fat mass, lean mass, BP, insulin, cholesterol and lipids, changes in intake of carbohydrate, fat, protein, alcohol, fibre, energy expenditure)</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td></td></tr>
</table>

Bibliographic reference/s	**Jane M, Hagger M, Foster J, Ho S, Kane R, and Pal S (2017) Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: A randomised controlled trial. PloS one 12(6), e0178326**		
Study name	Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: a randomised controlled trial		
Statistical Analysis	Repeated measures the ability to detect a weight loss difference of 7% of initial body weight between the fb and pamphlet groups, an alpha of 0.05 (two-sided), sample size of 96 achieves 80% power. To allow for attrition rate of 20% - planned to recruit ≥120 participants Generalised linear mixed model, regression model used Not ITT analysis		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low	Randomisation present by computer. There were no differences of baseline characteristics
	Risk of bias due to deviations from intended interventions (assignment)	Low	Participants were blinded to the intervention, no reports of deviations.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None reported
	Missing outcome data	Some concerns	Data from 67 participants was used for the statistical analysis from 137 randomised.
	Risk of bias in measurement of the outcome	Low	None reported
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding	Not reported		
Comments			
Additional references			

Bibliographic reference/s	**Jane M, Hagger M, Foster J, Ho S, Kane R, and Pal S (2017) Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: A randomised controlled trial. PloS one 12(6), e0178326**	
Study name	Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults: a randomised controlled trial	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	
	Social support	X
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Jennings et al 2014

Bibliographic reference/s	**Jennings Cally A, Vandelanotte Corneel, Caperchione Cristina M, and Mummery W Kerry (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes-a randomised controlled trial. Preventive medicine 60, 33-40**
Study name	Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial
Registration	registered with the Australian New Zealand Clinical Trials Registry (ACTRN12612000730808)
Study type	RCT
Study dates	Between May and July 2010, participants were randomly allocated into either a 12-week intervention (n = 195) or a control (n = 202) group
Objective	This study examined the effectiveness of a fully automated web-based programme to increase physical activity in adults with Type 2 diabetes
Country/ Setting	Australia
Number of participants / clusters	A total of 397 individuals completed the baseline questionnaire and were randomised, resulting in 202 participants in the control and 195 participants in the intervention group.

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Jennings Cally A, Vandelanotte Corneel, Caperchione Cristina M, and Mummery W Kerry (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes-a randomised controlled trial. Preventive medicine 60, 33-40</td></tr>
<tr><td>Study name</td><td colspan="3">Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial</td></tr>
<tr><td>Attrition</td><td colspan="3">A minimum sample size of 220 was chosen for the study representing 80% power at a ≤0.05 significance level to detect a medium effect size or greater. Due to the length of the follow-up period the sample size was inflated for drop-out as previous studies have reported as high as 70% attrition for a six-month follow-up period. At 12 weeks, 71% (n = 144) of the control group participants and 61% (n = 118) of the intervention group participants completed the post-intervention questionnaire (total of 66%). At 36 weeks, 49% (n = 99) of the control group and 45% (n = 87) of the intervention group completed the follow-up questionnaire (total of 47%). Complete data for the three assessment periods were obtained for 46% (n = 92) of the participants in the control and 42% (n = 82) of the participants in the intervention group.</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="3"><table>
<tr><th></th><th>Control n=202</th><th>Intervention n=195</th><th>P value</th></tr>
<tr><td>Male n (%)</td><td>107 (53)</td><td>101 (51.8)</td><td>.8</td></tr>
<tr><td>Female n (%)</td><td>95 (47)</td><td>94 (48.2)</td><td>.7</td></tr>
<tr><td>Age (years), mean (SD)</td><td>58.29 (9.9)</td><td>58.21 (10.6)</td><td>.9</td></tr>
<tr><td>BMI (kg/m^2), mean (SD)</td><td>33.55 (6.4)</td><td>33.45 (6.7)</td><td>.9</td></tr>
</table></td></tr>
<tr><td>Method of allocation</td><td colspan="3">Eligible participants were assigned to either the control or intervention group through a single sequence of computer-generated numbers that randomly allocated participants based on their call number from initial screening. To ensure concealment, the lead researcher conducting randomisation was blinded from participant's group allocation until baseline screening of the participant had been completed.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="3">a) diagnosed with Type 2 diabetes; b) available access to internet and email; c) the ability to read and understand English; d) above 18 years old; e) a “no” response to all questions on the physical activity readiness questionnaire (PAR-Q) (a “yes” response to one or more questions required physician approval prior to participating in the study) currently not receiving diabetes education and g) not meeting the national physical activity guidelines (≥150 min moderate physical activity per week).</td></tr>
<tr><td>Exclusion criteria</td><td colspan="3"></td></tr>
<tr><td rowspan="4">Intervention</td><td>TIDieR Checklist criteria</td><td colspan="2">Details</td></tr>
<tr><td>Brief Name</td><td colspan="2"></td></tr>
<tr><td>Rationale/theory/Goal</td><td colspan="2"></td></tr>
<tr><td>Materials used</td><td colspan="2">All participants (control and intervention groups) were mailed a YAMAX Digi-walkerSW-9700 pedometer to use as a motivational and self-monitoring tool during the intervention and participants were able to retain</td></tr>
</table>

Bibliographic reference/s	**Jennings Cally A, Vandelanotte Corneel, Caperchione Cristina M, and Mummery W Kerry (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes-a randomised controlled trial. Preventive medicine 60, 33-40**	
Study name	Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial	
		the pedometers upon completion of the intervention period. Pedometers were provided to both groups to ensure that any effects on physical activity from the pedometer were accounted for.
	Procedures used	**Intervention:** The programme utilises a self-management approach and was developed based on the Theory of Planned Behaviour. The self-management approach aims to encourage the development of skills and abilities to initiate and maintain health-related behaviour change. To operationalise TPB constructs (attitude, perceived behavioural control and subjective norm) and self-management the following components were implemented: educational modules, social support, positive reinforcement, personalised feedback and a number of activities such as goal setting and planning. The website encompassed seven main sections; 'home', 'online logbooks', 'workbook', 'library', 'goals', 'discussions' and 'contacts'. Weekly education modules in the workbook section included a new module topic each week that operationalised TPB constructs and self-management. In addition to the website, participants in the intervention group were also distributed a weekly email reminder, the content of which changed weekly, but always contained a link to the intervention website. **Control group** The control group had access to a modified version of the website that restricted the information that they could access. As such the control group could only view a modified 'home', and 'contacts' section of the website. The home page only displayed a static message that thanked participants for completing the questionnaires and directed them to the 'contacts' section on the modified website. The 'contacts' section was identical to that of the intervention group. Aside from being provided pedometers and emailed to complete the 12 and 36-week questionnaires, no further contact or intervention was provided to the control group throughout the intervention.
	Provider	
	Digital platform	
	Location	

Bibliographic reference/s	**Jennings Cally A, Vandelanotte Corneel, Caperchione Cristina M, and Mummery W Kerry (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes-a randomised controlled trial. Preventive medicine 60, 33-40**	
Study name	Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial	
	Duration	12 weeks. At the completion of the 12-week intervention phase, the website remained accessible; however, no further updates were made to the website.
	Intensity	See below
	Tailoring/adaptation	Participants were able to set weekly physical activity goals and receive personalised feedback based on meeting their predefined goals for each of 12 weeks (Appendix E). The automated and personalised physical activity messages were designed to be perceived as personally relevant and encourage continued use of the logbooks. Asynchronous communication was facilitated through a discussion board, where participants were encouraged to join discussions with the programme manager and other participants.
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	-
Follow up	Assessments were collected online via the 'Diabetes in Check' website at baseline, immediately post-intervention (12 weeks) and 6 months following intervention completion (36 weeks). Only 6-month data extracted according to protocol.	
Data collection	Physical activity was measured using the long form International Physical Activity Questionnaire (IPAQ). The IPAQ assesses the frequency (days) and duration (min) of physical activity during the previous 7 days. For the purposes of the current study the primary outcome derived from the IPAQ was, total minutes of physical activity per week (cumulative total for walking, moderate and vigorous activity).	
Critical outcomes measures and effect size	**Observed estimated marginalised means, standard errors (SE) and differences in physical activity behaviour at baseline, 12 and 36 weeks (ITT analysis). Australia 2010–2011: (data only extracted for 36 weeks)** Intention-to-treat analysis included 202 participants in the control and 195 in the intervention groups. PA outcomes presented in min/week	

Outcome	Baseline, Mean (SE)	36 weeks, Mean (SE)
Control	622.2 (140.9)	720.9 (168.4)
Intervention	641.5 (152.2)	745.5 (177.7)
Control	390.9 (34.4)	373.9 (33.6)

Bibliographic reference/s	**Jennings Cally A, Vandelanotte Corneel, Caperchione Cristina M, and Mummery W Kerry (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes-a randomised controlled trial. Preventive medicine 60, 33-40**		
Study name	Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial		
	Intervention	438.2 (39.0)	406.7 (37.5)
	Weekend sitting		
	Control	288.2 (29.3)	254.5 (25.8)
	Intervention	313.8 (31.9)	287.45 (29.6)
Important outcomes measures and effect size			
Statistical Analysis	ITT analysis included all participants using baseline carried forward values for missing data at 12 and 36 weeks. Completer's analysis only included participants' data that completed all three assessment periods		
Risk of bias (ROB) Overall ROB	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Participants randomly allocated using computer generated random numbers. No significant difference between baseline characteristics.
	Allocation concealment	Some concerns	No information on blinding or concealment
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	No evidence of intervention contamination or deviation from assignment.
	Risk of bias due to deviations from intended interventions (adherence)	High risk	High attrition levels
	Missing outcome data	High risk	Sample size did not reach pre-specified value therefore unlikely that adequately powered.
	Risk of bias in measurement of the outcome	Some concerns	Subjective measures may have been affected by possible lack of blinding

Bibliographic reference/s	**Jennings Cally A, Vandelanotte Corneel, Caperchione Cristina M, and Mummery W Kerry (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes-a randomised controlled trial. Preventive medicine 60, 33-40**		
Study name	Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial		
	Risk of bias in selection of the reported result	Low risk	No evidence of reporting bias
	Other sources of bias	N/A	None
	Overall Risk of Bias	High risk	
Source of funding	Not reported		
Comments	N/A		
Additional references	-		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support	X	
	Self-belief		
	Comparison of outcomes		
	Comparison of behaviour		
	Identity		
	Shaping knowledge		
	Regulation		

Kanera et al 2017

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial
Registration	Dutch Trial Register NTR3375
Study type	RCT, adults.
Study dates	

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**		
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial		
Objective	The present study evaluates the 12-month effects of a fully automated web-based cancer aftercare intervention. We investigated whether the previously determined 6-month effects on moderate physical activity and vegetable intake were maintained over 12 months		
Country/ Setting			
Number of participants / clusters	A two-armed randomized controlled trial was conducted using online self-report questionnaires among survivors of various types of cancer (N = 462). 231 participants were allocated to the control condition and 231 were allocated to the intervention. 221 participated in the 6-month follow up in the control and 188 participated in the 6 months follow up in the intervention.		
Attrition	With an expected dropout of some 20–23%, the required sample size was N = 376 (188 per condition) at baseline. In total, 381 (82.5%) participants filled in the 12-month follow-up questionnaire and 81 (17.5%) were lost to follow-up since baseline. For the analyses of moderate PA, 11 respondents were excluded due to outliers (>6720 min p/w PA) at either baseline, 6-month or 12-month follow-up, which is in accordance with the SQUASH scorings manual, resulting in a baseline dataset of N = 451 for analyses		
Participant /community characteristics.		**Intervention (n=231)**	**Control (n=231)**
	Female, n (%)	183 (79.2)	186 (80.5)
	Age, M (SD)	55.6 (11.5)	56.2 (11.3)
	Breast cancer, n (%)	162 (70.1)	164 (71.0)
	Other types of cancer, n (%)	69 (29.9)	67 (29.0)
	BMI, n (%):		
	< 18.5, underweight	2 (0.9)	3 (1.3)
	18.5–24.9, normal weight	105 (45.5)	93 (40.3)
	25.0–29.9, overweight	90 (39.0)	96 (41.6)

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**		
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial		
	30.0–34.9, obese	24 (10.4)	32 (13.9)
	≥ 40, morbidly obese	10 (4.3)	7 (3.0)
Method of allocation	After centralized registration, randomization of the participants (ratio of 1:1) was automatically performed by means of a digital randomizer at the first login to the KNW		
Inclusion criteria	Eligible individuals were adult (≥ 18 years of age), Dutch speaking cancer survivors, diagnosed with various types of cancer, and who had completed primary cancer treatment (surgery, chemo- or radiation therapy) with curative intent at least 4 weeks, and up to 56 weeks prior to initial participation.		
Exclusion criteria	Individuals with signs of cancer recurrence or severe medical, psychiatric, or cognitive disorders were excluded from participation		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	The KNW is a web-based self-management program that operates without human involvement	
	Rationale/theory/Goal	To achieve behaviour change, specific determinants and behaviour change methods were applied that derived from social cognitive behaviour change theories and models, such as the Theory of Planned Behaviour, the Self-regulation Theory, and the Integrated Model for Change (I-Change Model).	
	Materials used		
	Procedures used	The KNW self-management modules are PA, diet, smoking cessation, return-to-work, social relationships, fatigue, and anxiety and depression. The eighth module comprises generic information on the most common residual problems (Fig. 1). After completing the baseline assessment, the IC received feedback on their reported (lifestyle) scores by comparing them with the guidelines, including advice on what KNW modules were most relevant for them to use. This module referral advice was designed as a traffic light (red, orange, green) and was a aimed at consciousness raising, an effective	

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**	
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial	
		behaviour change method to change awareness and risk perception. When the PA and/or dietary guidelines were either not met or only partly met, respondents were advised to visit the corresponding module. Nevertheless, the respondents were free to use any module of their interest.
	Provider	Computer tailored programme only, no input from HCP.
	Digital platform	
	Location	
	Duration	The intervention group had access to the online intervention for 6 months, and the control group received access after 12-months.
	Intensity	The intervention mainly aimed at adopting and/or increasing moderate intensive activities (e.g. brisk walking, cycling, moderate sports activities, and household activities); however, if participants were interested, more vigorous sports. Although respondents were encouraged to follow the PA recommendations, no specific prescriptions were provided concerning frequency, intensity, duration, and mode of specific exercises. The advice focused on sustainable behaviour change by stimulating activities that fit optimally to individuals' capabilities and preferences
	Tailoring/adaptation	The module-content was personalized by means of computer tailoring and customized to personal characteristics (gender, age, marital status, children, educational level, BMI), cancer-related issues (type of cancer, type and number of comorbidities), motivational behavioural determinants (attitude, self-efficacy and intention), and current lifestyle behaviour. In addition, behaviour change and self-regulation methods that are relevant in

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**	
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial	
		maintaining behavioural changes were applied, such as providing personalized feedback, goal setting, action- and coping planning, reattribution training, and self-monitoring. All these methods were used to improve self-efficacy and to overcome possible barriers, which is in line with social cognitive behavioural change theories. Within the PA module, at first, detailed questions were asked concerning possible physical limitations, co-morbid conditions, and contraindications to vigorously intensive activity, as well as perceived barriers, social support, self-efficacy, and the pros and cons of being (more) physically active. This additional information was used to optimize the tailored feedback concerning the PA action- and coping planning. Action planning includes the when, where, and how of intended action. Coping planning refers to the mental simulation of overcoming anticipated barriers to action. Participants were encouraged to gradually building up PA by setting achievable goals that fit with their capacities, to keep a record of the specified exercises, and to evaluate their activities. Videos of fellow cancer survivors and of specialized health professionals were enclosed to provide appropriate role models and information concerning different ways to be more active, how to cope with (physical) difficulties, how to overcome barriers, and how to attribute and cope with possible failures.
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up		
Data collection	Moderate PA was assessed using the validated self-report Short Questionnaire to Assess Health Enhancing Physical Activity (SQUASH) at baseline, after 6	

<table>
<tr><td>Bibliographic reference/s</td><td colspan="7">Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19</td></tr>
<tr><td>Study name</td><td colspan="7">Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial</td></tr>
<tr><td></td><td colspan="7">months, and after 12 months. The intensity of activities was categorized into light, moderate, and vigorous. Weekly minutes of moderate PA were calculated by multiplying the number of days per week of PA with the number of minutes per day of reported moderate intensive activities. Vegetable consumption was measured by assessing the number of days per week (range 0-7) of vegetable consumption and the number of vegetable servings per day (one tablespoon = 50 g). These items derived from the Dutch Standard Questionnaire on Food Consumption. The dependent variable, vegetable consumption in grams per day (g p/d) for 1 week (considered as an average week), was calculated by multiplying the number of days by the amount of vegetables a day (number of tablespoons × 50 grams), divided by 7 days a week</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="7">Observed means and standard deviations of moderate PA and vegetable intake per time point and group:
<table>
<tr><td></td><td colspan="2">Baseline</td><td colspan="2">6 months</td><td colspan="2">12 months</td></tr>
<tr><td colspan="7">Moderate PA min p/w, M (SD)</td></tr>
<tr><td>Intervention</td><td>n =225</td><td>595.9 (620.5)</td><td>178</td><td>746.6 (676.3)</td><td>162</td><td>688.1 (570.6)</td></tr>
<tr><td>Control n=226</td><td>n= 226</td><td>526.5 (546.5)</td><td>215</td><td>598.9 (510.7)</td><td>206</td><td>512.2 (452.1)</td></tr>
<tr><td>Vegetable intake</td><td colspan="2">g p/d M (SD)</td><td colspan="2">g p/d M (SD)</td><td colspan="2">g p/d M (SD)</td></tr>
<tr><td>Intervention</td><td>n = 231</td><td>138.5 (67.9)</td><td>184</td><td>146.6 (56.0)</td><td>166</td><td>95.3 (44.7)</td></tr>
<tr><td>Control</td><td>n = 231</td><td>124.2 (57.5)</td><td>219</td><td>124.9 (60.8)</td><td>210</td><td>81.4 (44.1)</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="7">N/A</td></tr>
<tr><td>Statistical Analysis</td><td colspan="7"></td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td colspan="3">Outcome</td><td colspan="2">Judgement (Low / High / some concerns)</td><td>Comments</td></tr>
<tr><td></td><td colspan="3">Risk of bias arising from the randomisation process</td><td colspan="2">Some concerns</td><td>Randomisation present. There were no statistically significant differences between</td></tr>
</table>

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**		
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial		
			the intervention and control participants at baseline for age, BMI, activity levels, or self-efficacy. However only female participants were recruited.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Blinding not feasible due to nature of intervention. To control for a potential diffusion effect (i.e. contamination from intervention group to control group), participants from the same department and/or work area were randomly assigned as a group to either the intervention or control groups.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None reported
	Missing outcome data	Low	The attrition rate was 10% for the intervention group and 22% for the control group at 24 weeks. No difference in age, BMI, baseline step counts, or self-efficacy scores between participants who dropped out and those who completed the study.
	Risk of bias in measurement of the outcome	Low	None reported, objective outcome measure.

Bibliographic reference/s	**Kanera I M, Willems R A, Bolman C A, Mesters I, Verboon P, and Lechner L (2017) Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial. International journal of behavioral nutrition and physical activity 14(1), 19**		
Study name	Long-term effects of a web-based cancer aftercare intervention on moderate physical activity and vegetable consumption among early cancer survivors: a randomized controlled trial		
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	Any other publications which have contributed evidence to this data extraction for the study		
Behaviour change techniques (16 theoretical clusters	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief	X	
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		
	Comparison of behaviour		

Kernot et al 2019

Bibliographic reference/s	Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.
Study name	Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial
Registration	Australian New Zealand Clinical Trial Registry ACTRN12613000069752
Study type	Cluster RCT
Study dates	September 2013 – October 2014

Bibliographic reference/s	Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.			
Study name	Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial			
Objective	To test the effectiveness of the Mums Step It UP (MSIU) programme, a social networking team-based physical activity intervention for postpartum women, delivered by a Facebook app in improving: Accelerometer measured moderate to vigorous physical activity (MVPA) and walking; Quality of life, BMI, sleep, and depressive symptoms.			
Country/ Setting	Australia, community.			
Number of participants / clusters	Participants were recruited through Facebooks adverts, newspapers, flyers and a recruitment agency. Of women who responded to advertisements were directed to invite eligible friends from their existing Facebook network to join their teams. These teams form the clusters in this cluster RCT. 23 teams, 97 participants in total MSIU arm: 8 teams, 41 participants total Pedometer arm: 8 teams, 39 participants total Control: 7 teams, 40 participants Total, 120 particiapants			
Attrition	MSIU: 8 (20%) lost to 6-month follow-up Pedometer: 6 (17%) lost to 6-month follow-up Control: 10 (25%) lost to 6-month follow-up			
Participant /community characteristics.	**Baseline characteristics of sample by treatment arm (n = 1689):**			
		MSIU (n=41)	Pedometer (n=39)	Control (n=40)
	Age y, mean (95% CI)	32.5 (31.6 to 33.5)	32.4 (31.1 to 33.7)	30.7 (29.2 to 32.2)
	Education status, n (%)			
	Some high school	2.0 (4.9)	2.0 (5.1)	0.0 (0.0)
	Completed high school	2.0 (4.9)	3.0 (7.7)	9.0 (22.5)
	Tertiary educated	37 (90.2)	34 (87.2)	31.0 (77.5)
	Work status, n (%)			
	Not working/ maternity leave	25.0 (61.0)	26.0 (66.7)	31.0 (77.5)
	Working part time	14.0 (34.1)	11.0 (28.2)	9.0 (22.5)
	Working full time, n (%)	2.0 (4.9)	2.0 (5.1)	0.0 (0.0)

Bibliographic reference/s	Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.			
Study name	Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial			
	Married/de facto, n (%) Single, n (%)	41.0 (100.0) 0.0 (0.0)	34.0 (87.2) 5.0 (12.8)	23.0 (95.0) 2.0 (5.0)
	**Table entries are shown as frequency and percent of known values, n (%), unless specified differently.*			
Method of allocation	Computer-generated allocation sequence following baseline assessment. Allocation was concealed but it is not disclosed how.			
Inclusion criteria	Up to 12 months postpartum Current Facebook users Able to read and understand English Live in Greater metropolitan Adelaide			
Exclusion criteria	Medical condition preventing them from participating in a walking programme Were pregnant or planning on falling pregnant in the subsequent 3 months			
Intervention	TIDieR Checklist criteria	Details		
	Brief Name	Mums Step It Up (MSIU)		
	Rationale/theory/Goal	A software company approached the research team to develop the MSIU app using Facebook's application programming interface platform.		
	Materials used	MSIU arm were given access to the MSIU Facebook app and a pedometer. The app was a 50-day walking challenge where postpartum women were encouraged to walk 500,000 steps in that time. The pedometer group received a pedometer only.		
	Procedures used	*MSIU app* Consisted of 7 tabs: Dashboard – homepage with all key information and links to other pages Log My Steps tablet – calendar where participants log steps/time spent in other physical activity My Group tablet – include a team tally board, team message board, and virtual gifts that can be sent to team members Achievements tablet – listed awards received for step count and step logging achievements Compare Groups tablet – a graph comparing their team's achievements with other teams at the same stage		

Bibliographic reference/s	Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.	
Study name	Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial	
		Settings tablet – to opt out of receiving app notifications Help tablet – to assist if experiencing technical issues The app also included a daily physical activity tip and automated emails. Facebook notifications were received when a team member posted a comment on the group discussion board or sent a virtual gift. *Pedometer* The pedometer was a Yamasa MP-100, Yasma Corp, Chiba, Japan) and a printed logbook to record their daily steps over 50 days. There was no group/team component for the pedometer condition. *Control* Individuals received written advice through email on increasing physical activity and were placed on a waiting list to receive the MSIU intervention. There was no group/team component for the control condition.
	Provider	
	Digital platform	
	Location	
	Duration	
	Intensity	MSIU: daily tips sent, weekly emails containing each individual's progress. Emails were also sent 5 days prior, 3 days prior and the day before the walking challenge started.
	Tailoring/adaptation	No
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up	6 weeks and 6 months	
Data collection	Accelerometer-derived MVPA All participants wore ActiGraph GT3X+ triaxial accelerometers on their right hip, 24h/d for 7 days. Self-reported physical activity was measured with Active Australia Survey (AAS). AAS asks frequency and time spent in variety of activities over the past 7 days. As walking was a primary outcome for this study, walking time was given as minutes per week. Secondary outcomes:	

<table>
<tr><td>Bibliographic reference/s</td><td>Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.</td></tr>
<tr><td>Study name</td><td>Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial</td></tr>
<tr><td></td><td>Quality of life – done via Assessment of Quality of Life 8D (AQoL 8D) includes 35 items addressing independent living, relationships, mental health, pain, senses, self-worth and happiness.
BMI – calculated be height and weight taken by researcher.
Participants' use of programme was recorded, assessed by login statistics.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Outcome measures at baseline, and 6-month follow-up:
<table>
<tr><td></td><td>MSIU</td><td>Pedometer</td><td>Control</td></tr>
<tr><td rowspan="4">Accelerometer MVPA min/wk, mean (95% CI)</td><td>Baseline:
147 (109, 185)</td><td>Baseline:
195 (142, 248)</td><td>Baseline:
137 (102, 173)</td></tr>
<tr><td>6m:
173 (142, 204)</td><td>6m:
227 (184, 270)</td><td>6m:
160 (136, 184)</td></tr>
<tr><td>Effect size:
0.02 (-0.42, 0.46)</td><td>Effect size: 0.06
(-0.36, 0.50)</td><td>-</td></tr>
<tr><td colspan="3">Group by time interaction, F (p): 0.10 (0.90)</td></tr>
<tr><td rowspan="4">Self-reported walking min/wk, mean (95% CI)</td><td>Baseline:
171 (121, 221)</td><td>Baseline:
188 (130, 246)</td><td>Baseline:
186 (127, 245)</td></tr>
<tr><td>6m:
188 (156, 221)</td><td>6m:
194 (157, 231)</td><td>6m:
192 (139, 245)</td></tr>
<tr><td>Effect size:
0.06 (-0.37, 0.50)</td><td>Effect size:
0.00 (-0.44, 0.44)</td><td>-</td></tr>
<tr><td colspan="3">Group by time interaction, F (p): 0.15 (0.90)</td></tr>
<tr><td rowspan="4">Self-reported MVPA min/wk, mean (95% CI)</td><td>Baseline:
299 (202, 396)</td><td>Baseline:
300 (198, 402)</td><td>Baseline:
336 (219, 453)</td></tr>
<tr><td>6m:
375 (272, 478)</td><td>6m:
312 (250, 374)</td><td>6m:
388 (265, 511)</td></tr>
<tr><td>Effect size:
0.06 (-0.37, 0.50)</td><td>Effect size:
-0.10 (-0.54, 0.34)</td><td>-</td></tr>
<tr><td colspan="3">Group by time interaction, F (p): 0.71 (0.51)</td></tr>
<tr><td rowspan="4">Quality of life, mean (95% CI)</td><td>Baseline:
0.82 (0.78, 0.86)</td><td>Baseline:
0.82 (0.78, 0.86)</td><td>Baseline:
0.85 (0.81, 0.89)</td></tr>
<tr><td>6m:
0.87 (0.84, 0.90)</td><td>6m:
0.82 (0.78, 0.86)</td><td>6m:
0.86 (0.83, 0.89)</td></tr>
<tr><td>Effect size:
0.42 (-0.30, 0.85)</td><td>Effect size:
0.00 (-0.44, 0.44)</td><td>-</td></tr>
<tr><td colspan="3">Group by time interaction, F (p): 0.90 (0.42)</td></tr>
<tr><td></td><td>Baseline:</td><td>Baseline:</td><td>Baseline:</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="4">Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.</td></tr>
<tr><td>Study name</td><td colspan="4">Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial</td></tr>
<tr><td></td><td colspan="4"><table>
<tr><td rowspan="4">BMI kg/m^2, mean (95% ci)</td><td>27.0 (24.6, 29.4)</td><td>25.2 (23.5, 26.9)</td><td>27.9 (26.1, 29.7)</td></tr>
<tr><td>6m:
26.9 (24.5, 26.1)</td><td>6m:
24.4 (22.7, 26.1)</td><td>6m:
27.3 (25.5, 29.1)</td></tr>
<tr><td>Effect size:
0.29 (-0.15, 0.73)</td><td>Effect size:
-0.18 (-0.62, 0.27)</td><td>-</td></tr>
<tr><td colspan="3">Group by time interaction: 1.40 (0.30)</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="4">App usage data:<table>
<tr><td>Indicator of engagement*</td><td>MSIU
n=38</td></tr>
<tr><td>Number of times visited app in 50 days, mean (95% CI)</td><td>26 (21.5, 30.5)</td></tr>
<tr><td>Number of days logged steps, mean (95% CI)</td><td>48 (45.9, 50.0)</td></tr>
<tr><td>Number of virtual gifts sent to teammates, mean (95% CI)</td><td>7 (4.2, 9.8)</td></tr>
<tr><td>Number of posts on the group message wall, mean (95% CI)</td><td>9 (5.9, 12.1)</td></tr>
</table>When comparing the number of days steps were logged with the mean number of visits to the app, it was evident that most participants logged steps for a number of days at a time.</td></tr>
<tr><td>Statistical Analysis</td><td colspan="4">A sample of 108 participants was required to detect a medium effect size (Cohen’s d=0.5), given 3 groups and 3 repeated measures, an alpha of 0.05 and 80% power. Assuming teams would be approx. 6 members, the design effect of this clustering would 1+0.01(6-1) =1.05. Therefore, a final target total was 114 (108x1.05).
ITT analyses were used.
Multiple imputation was conducted by fully conditional specification, because testing showed that data were not missing at random.
Effectiveness of the MSIU program was deduced by random effects mixed modelling to compare mean changes in outcomes between conditions at each follow-up point. Time and condition allocations were treated as fixed factors, and clusters and individuals are random factors. A condition by time interaction was calculated.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>Outcome</td><td>Judgement (Low / High / some concerns)</td><td colspan="2">Comments</td></tr>
<tr><td></td><td>Risk of bias arising from the randomisation process</td><td>Low</td><td colspan="2">Randomisation present. No difference in baseline</td></tr>
</table>

Bibliographic reference/s	Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.		
Study name	Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial		
			variables between the groups.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Participants blinded and intervention delivered by computer. Intention to treat analyses used.
	Risk of bias due to deviations from intended interventions (adherence)	Low	High retention and engagement rates throughout the intervention period.
	Missing outcome data	Low	Intention to treat analysis and multiple imputation (fully conditional specification) was conducted for missing data.
	Risk of bias in measurement of the outcome	Low	Objective outcome measures not effected. Adjusted for clustering.
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Low	
	Other outcome details:	N/A	
Source of funding	University of South Australia research grant was used to pay for the development of the MSIU app. JK was supported by an APA PhD Scholarship. CM was supported by a National Heart Foundation Postdoctoral Fellowship and a National Health and Medical Research Council Career Development Fellowship.		
Comments	N/A		
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	x	
	Goals and planning	x	
	Social support	x	
	Self-belief		

Bibliographic reference/s	Kernot J; Lewis L; Olds T; Maher C; Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial (2019) Journal of Physical Activity & Health. Feb 1;16(2):125-133.	
Study name	Effectiveness of a Facebook-Delivered Physical Activity Intervention for Postpartum Women: A Randomized Controlled Trial	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	x

Kolt et al 2016

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**			
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial			
Registration				
Study type	RCT, adults			
Study dates	Participants were assigned to groups March 2012–June 2013.			
Objective	This trial investigated the effectiveness of a Web 2.0-based intervention on physical activity behaviour, and the impact on website usage and engagement.			
Country/ Setting	Two regions in Australia (South Western Sydney, Central Queensland).			
Number of participants / clusters	504 (328 women, 126 men) insufficiently active adult participants were randomly allocated to one of two web-based interventions or a paper-based Logbook group			
Attrition				
Participant /community characteristics.		Web 2.0 (n=168)	Web 1.0 (n=165)	Logbook (n=171)
	Male	54 (32%)	58 (35%)	64 (37%)
	Female	114 (68%)	107 (65%)	107 (63%)
	18-34 years	22 (13%)	30 (18%)	20 (12%)

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**			
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial			
	35-44 years	37 (22%)	24 (15%)	29 (17%)
	45-54 years	41 (24%)	47 (28%)	49 (29%)
	55-64 years	41 (24%)	44 (27%)	43 (25%)
	65 and over	27 (16%)	20 (12%)	30 (18%)
Method of allocation				
Inclusion criteria	Participants were required to be over 18 years, have internet access, participate in <30 min of MVPA on 5 or more days of the week,32 not have an existing medical condition that contraindicated PA (assessed by the Physical Activity Readiness Questionnaire (PAR-Q)),33 and not have ever been a member of the existing 10 000 Steps programme (i.e. the Web 1.0 group in this trial)			
Exclusion criteria	None			
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**	
	Brief Name	WALK 2.0 is a three-arm randomised controlled trial (RCT) that compared effectiveness of two web-based PA promotion interventions with a paper-based Logbook intervention.		
	Rationale/theory/Goal	To increase PA		
	Materials used	Computer-tailored programme. An ActiGraph GT3X activity monitor (ActiGraph, Pensacola, USA) was used to measure PA		
	Procedures used	Web 1.0 group - participated in the existing 10 000 Steps programme, designed to promote PA through an online step log, a pedometer for monitoring PA, individual self-monitoring features and online educational materials. Web 2.0 group – were provided access to a website (WALK 2.0) designed specifically for this trial. This website incorporated the core 10 000 Steps features as well as tools to promote user-to-user interaction, based around social networking including		

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**	
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial	
		befriending individual users to create a 'friend' list, private messaging to other users, posting 'status updates' on current activity which could be 'liked' or commented on by other users, an 'activity stream' consisting of the most recent status updates from all users, participating in a 'virtual walking group' that contributed towards a monthly step goal and user blogs. Logbook group - participants were provided with a paper-based logbook that contained same key written messages available through the other arms (e.g., instruction on goal setting, increasing PA opportunities. log activity).
	Provider	
	Digital platform	See above
	Location	
	Duration	Participants were able to access and use these interventions for the entire period of the trial (18 months)
	Intensity	Not reported
	Tailoring/adaptation	Not reported
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	N/A
Follow up	6 months	
Data collection	PA was assessed using the ActiGraph GT3X activity monitor during all waking hours over 7 days. Monitors were initialised to collect triaxial acceleration data using 1-second epochs, and data were aggregated to 60-second epochs using Actilife software 6.6.3. A customised Microsoft Excel macro was used to provide daily measures of MVPA (>1951 counts/min) and wear time, based on activity counts per minute. Non-wear time was defined as 60 min of consecutive zero counts and included a 2 min spike tolerance of 50 counts/min of movement. Valid wear time was defined as ≥10 hours on ≥5 days, within a 7-day period.	
Critical outcomes measures and effect size. (time points)	**Summary of minutes per day of MVPA at 12 and 18 months follow up:**	

	Web 2.0 (n=168)	Web 1.0 (n=165)	Logbook (n=171)

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**							
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial							
	Baseline	Mean 23.16 (SD 17.21) n= 157		Mean 25.77 (SD 20.49) n=154		Mean 23.20 (SD 16.87) n=171		
	12 months	Mean 28.56 (SD 21.22) n=87		Mean 31.76 (SD 22.92) n=85		Mean 28.53 (SD 23.21)		
	18 months	Mean 28.41 (SD 21.04) n=71		Mean 33.38 (SD 26.61) n=73		Mean 28.47 (SD 22.75) n=78		
	Analysis of minutes per day of MVPA (unadjusted and adjusted), results from the linear mixed effects model:							
	Unadjusted mean change from baseline (95% CI)				Unadjusted differences between groups in change from baseline (95% CI)			
	Time (months	Web 2.0	Web 1.0	Logbook	Web 1.0/Web 2.0	Web 1.0/logbook	Web 2.0/logbook	group x time p value
	12	4.2 (1.0 to 7.3)**	5.0 (0.6 to 9.4)*	5.1 (0.8 to 9.4)*	0.9 (−4.5 to 6.3)	−0.1 (−6.2 to 6.1)	−1.0 (−6.3 to 4.4)	0.0197
	18	3.0 (−0.8 to 6.8)	5.8 (−0.3 to 11.9)	4.5 (−0.1 to 9.1)	2.8 (−4.4 to 9.9)	1.3 (−6.4 to 8.9)	−1.5 (−7.5 to 4.5)	
	‡Adjusted mean change from baseline (95% CI)				‡Adjusted differences between groups in change from baseline (95% CI)			
	12	3.8 (0.5 to 7.0)*	4.9 (0.5 to 9.3)*	4.9 (0.7 to 9.1)*	1.1 (−4.4 to 5.6)	0.0 (−6.2 to 6.1)	−1.2 (−6.5 to 4.2)	0.0198
	18	3.1 (−0.6 to 6.7)	5.6 (−0.3 to 11.5)	4.6 (0.0 to 9.2)	2.5 (−4.5 to 9.5)	1.0 (−6.6 to 8.5)	−1.5 (−7.5 to 4.4)	

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**			
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial			
	*p<0.05, **p<0.01. †The group x time interaction p value is an omnibus test assessing if there is a difference in the change from baseline between treatment groups at any follow-up time point. ‡Adjusted for gender, age at baseline, BMI, education and wear time. MVPA, moderate-to-vigorous physical activity			
Important outcomes measures and effect size. (time points)		Web 1.0	Web 2.0	p value
	Average time on website/week at 12-18moths (seconds)	Mean 88.99 (SD 214.08) n=108	188.90 (SD 291.74) n=105	0.005
	Average number of website visits/week at 12-18 months (months)	Mean 0.52 (SD 1.13) n=108	1.74 (SD 2.25) n=105	<0.001
Statistical Analysis	Statistical analyses of change in PA were programmed using Statistical Analysis Software (SAS). Analysis of website engagement and usage measures and internet self-efficacy was conducted using (SPSS). Primary analysis of endpoints was intention-to-treat, where between-group differences in the change from baseline to follow-up at 3, 12 and 18 months were assessed using linear mixed models. Potentially confounding variables (gender, age at baseline, BMI, education, accelerometer wear time) were included in the model as a sensitivity analysis. Within-group changes from baseline, and adjusted differences between treatment groups in change from baseline, are presented with 95% CIs.			
Risk of bias (ROB)	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**	
Overall ROB	Risk of bias arising from the randomisation process	Low	Randomisation present. No significant differences in baseline between the groups except for BMI where the Web 2.0 group had a lower proportion of obese participants.	
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	Outcome measures were assessed by a blinded assessor, however no detail on blinding subjects. Personal log in details	

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**		
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial		
			provided for intervention so deviations unlikely.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None identified.
	Missing outcome data		No evidence of incomplete outcome data, with intention to treat analysis reported for all randomised subjects.
	Risk of bias in measurement of the outcome	Low	None identified. Outcome assessors blinded.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding	Not reported		
Comments	N/A		
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support	X	
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		

Bibliographic reference/s	**Kolt G S, Rosenkranz R R, Vandelanotte C, Caperchione C M, Maeder A J, Tague R, Savage T N, Van I A, Mummery W K, Oldmeadow C, and et al (2017) Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial. British journal of sports medicine 51(19), 1433-1440**	
Study name	Using Web 2.0 applications to promote health-related physical activity: findings from the WALK 2.0 randomised controlled trial	
	Regulation	
	Comparison of behaviour	

Laing et al 2014

Bibliographic reference/s	**Laing BY, Mangione CM, Tseng CH, Leng M, Vaisberg E, Mahida M, Bholat M, Glazier E, Morisky DE, and Bell DS (2014) Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients. Annals of Internal Medicine 161(Supplement 10), S5-S12**		
Study name	Effectiveness of a Smartphone Application for Weight Loss Compared With Usual Care in Overweight Primary Care Patients		
Registration	Randomized, controlled trial. (ClinicalTrials.gov: NCT01650337)		
Study type	RCT, adults		
Study dates	Assessments were completed at baseline, 3 months, and 6 months between August 2012 and May 2013		
Objective	To evaluate the effect of introducing primary care patients to a free smartphone app for weight loss in people overweight or obese.		
Country/ Setting	USA		
Number of participants / clusters	Participants were randomly assigned to receive usual primary care (n = 107) or usual primary care plus the MFP app (n = 105)		
Attrition	212 subjects randomly assigned. 32% of intervention group participants and 19% of control group participants were lost to follow-up at 6 months		
Participant /community characteristics			
		Intervention group (n=105)	Control group (n=107)
	Women n (%)	73 (70)	81 (76)
	Mean age (SD), y	43.1 (14)	43.2 (15)
Method of allocation	Participants were randomly assigned in blocks by BMI of 25 to 30 kg/m2 and BMI greater than 30 kg/m2 to ensure roughly equal distribution of overweight and obese patients between the intervention and control groups. Our statistician used R (R Foundation for Statistical Computing) to generate the permuted block sequence.		
Inclusion criteria			
Exclusion criteria			
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	mFit (The Mobile Fitness Project)	

Bibliographic reference/s	**Laing BY, Mangione CM, Tseng CH, Leng M, Vaisberg E, Mahida M, Bholat M, Glazier E, Morisky DE, and Bell DS (2014) Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients. Annals of Internal Medicine 161(Supplement 10), S5-S12**	
Study name	Effectiveness of a Smartphone Application for Weight Loss Compared With Usual Care in Overweight Primary Care Patients	
	Rationale/theory/Goal	MFP was designed by software engineers in collaboration with dietitians to create an app for calorie counting. The app provides a database of more than 3 million foods and an easy-to-use interface for logging food and exercise.
	Materials used	
	Procedures used	Users enter their current weight, goal weight, and goal rate of weight loss (limited to 0.23 to 0.90 kg/wk). The MFP app then shows the user their daily, individualized calorie goal. Each day, the app displays the user's calorie goal relative to their recorded caloric intake. MFP also generates real-time reports showing users their weight trend, caloric intake in the past week, and nutritional summaries of their diet (for example, grams of fat, carbohydrates, and protein and milligrams of sodium). The app also includes a bar code scanner for store-bought foods and a social networking feature that enables users to find friends and share their progress. Study participants were encouraged to use the social networking feature with friends and to set reminders to log their food
	Provider	Research assistants (non-physicians) helped intervention group participants download the MFP app onto their smartphone and showed them an instructional video developed by MFP. These participants also received a telephone call from the same research assistant 1 week after enrolment to assist with any technical problems with the app. Research assistants told control group patients to "choose any activities you'd like to lose weight," without specifying any particular interventions.
	Digital platform	Mobile app
	Location	
	Duration	Not reported
	Intensity	Not reported
	Tailoring/adaptation	Not reported
	Planned treatment fidelity	
	Actual treatment fidelity	

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Laing BY, Mangione CM, Tseng CH, Leng M, Vaisberg E, Mahida M, Bholat M, Glazier E, Morisky DE, and Bell DS (2014) Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients. Annals of Internal Medicine 161(Supplement 10), S5-S12</td></tr>
<tr><td>Study name</td><td colspan="2">Effectiveness of a Smartphone Application for Weight Loss Compared With Usual Care in Overweight Primary Care Patients</td></tr>
<tr><td></td><td>Other details</td><td>At the 3-month follow-up visit, all participants received a 1-page educational handout on healthy eating from www.myplate.gov. Participants received a $20 gift card for attending each follow-up visit. Each participant’s primary care provider was notified of their enrolment in the study.</td></tr>
<tr><td>Follow up</td><td colspan="2">3 and 6 months</td></tr>
<tr><td>Data collection</td><td colspan="2">weight, BMI, waist circumference, physical activity (Stanford 7-Day Physical Activity Recall), dietary intake data (3-day food records)</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Mean Changes in Weight, Blood Pressure, and Behavioural Mediators of Weight Loss (only 6 month data extracted):
<table>
<tr><td></td><td colspan="2">Change from baseline</td><td colspan="2">Between group difference</td></tr>
<tr><td>Measure</td><td>Control group</td><td>Intervention group</td><td>Value (95% CI)</td><td>P value</td></tr>
<tr><td>Weight (kg)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Month 6</td><td>0.27</td><td>0.003</td><td>–0.30 (–1.50 to 0.95)</td><td>0.63</td></tr>
<tr><td>Systolic blood pressure, mm Hg</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Month 6</td><td>1.5</td><td>-0.34</td><td>–1.7 (–7.1 to 3.8)</td><td>0.55</td></tr>
<tr><td>Healthy diet in past 7 d†</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Month 6</td><td>0.67</td><td>0.9</td><td>0.29 (–0.51 to 1.1)</td><td>0.48</td></tr>
<tr><td>Physical activity in past 7 d†</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Month 6</td><td>0.66</td><td>0.87</td><td>0.20 (–0.49 to 0.90)</td><td>0.56</td></tr>
<tr><td colspan="5">† Number of days in the past 7 d in which the behaviour was followed or practiced.</td></tr>
</table>
Engagement – logins among intervention group participants, by month
<table>
<tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>Participants who logged in n, (%)</td><td>94 (97)</td><td>53 (55)</td><td>46 (47)</td><td>42 (43)</td><td>22 (23)</td><td>34 (35)</td></tr>
<tr><td>Mean logins, n</td><td>20.9</td><td>8.6</td><td>6.5</td><td>6.3</td><td>4.3</td><td>6.2</td></tr>
<tr><td>Median logins, n</td><td>8</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Laing BY, Mangione CM, Tseng CH, Leng M, Vaisberg E, Mahida M, Bholat M, Glazier E, Morisky DE, and Bell DS (2014) Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients. Annals of Internal Medicine 161(Supplement 10), S5-S12</td></tr>
<tr><td>Study name</td><td colspan="3">Effectiveness of a Smartphone Application for Weight Loss Compared With Usual Care in Overweight Primary Care Patients</td></tr>
<tr><td></td><td colspan="3"><table>
<tr><td>IQR</td><td>2-24</td><td>0-6</td><td>0-4</td><td>0-2</td><td>0-0</td><td>0-2</td></tr>
<tr><td>Range</td><td>0-114</td><td>0-108</td><td>0-114</td><td>0-88</td><td>0-100</td><td>0-138</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="3">N/A</td></tr>
<tr><td>Statistical Analysis</td><td colspan="3">We determined that a total sample size of 82 patients (41 per group) would allow us 80% power to detect a 2.5-kg difference in weight change at 6 months between the groups, assuming an SD of 4.0 kg. We set a goal of enrolling 180 participants to account for rates of attrition as high as 55%. We used a linear mixed-effects model (PROC MIXED) to compare changes in weight, systolic blood pressure, and behavioural survey items between groups from baseline to 3 and 6 months while controlling for clinic site.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>Outcome</td><td>Judgement (Low / High / some concerns)</td><td>Comments</td></tr>
<tr><td></td><td>Risk of bias arising from the randomisation process</td><td>Some concerns</td><td>Randomisation present. Control group participants were aware that they were participating in a study of a weight-loss app but were blinded to the name of the app.</td></tr>
<tr><td></td><td>Risk of bias due to deviations from intended interventions (assignment)</td><td>Low</td><td>To minimize contamination of the control group, providers and clinic staff were also blinded to the name of the app and to group assignment</td></tr>
<tr><td></td><td>Risk of bias due to deviations from intended interventions (adherence)</td><td>Low</td><td>No information on deviations from intended interventions.</td></tr>
<tr><td></td><td>Missing outcome data</td><td>High</td><td>32% of intervention group participants and 19% of control group participants were lost to follow-up at 6 months</td></tr>
</table>

Bibliographic reference/s	**Laing BY, Mangione CM, Tseng CH, Leng M, Vaisberg E, Mahida M, Bholat M, Glazier E, Morisky DE, and Bell DS (2014) Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients. Annals of Internal Medicine 161(Supplement 10), S5-S12**		
Study name	Effectiveness of a Smartphone Application for Weight Loss Compared With Usual Care in Overweight Primary Care Patients		
	Risk of bias in measurement of the outcome	Some concerns	Outcome assessment may be affected by knowledge of weight loss intervention received.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	High	
	Other outcome details:	N/A	
Source of funding	Robert Wood Johnson Foundation Clinical Scholars Program, National Institutes of Health/National Center for Advancing Translational Sciences for the UCLA Clinical and Translational Science Institute, and the Resource Centers for Minority Aging Research Center for Health Improvement of Minority Elderly under the National Institutes of Health/National Institute on Aging.		
Comments	N/A		
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		X
	Social support		X
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		X
	Comparison of behaviour		

Marcus et al 2007

Bibliographic reference/s	**Marcus BH, Lewis BA, Williams DM, Dunsiger S, Jakicic JM, Whiteley JA, Albrecht AE, Napolitano MA, Bock BC, Tate DF, Sciamanna CN, and Parisi AF (2007) A comparison of Internet and print-based physical activity interventions. Archives of internal medicine 167(9), 944-9**			
Study name	A Comparison of Internet and Print-Based Physical Activity Interventions			
Registration	clinicaltrials.gov Identifier: NCT00200317			
Study type	RCT, adults			
Study dates	Trial was conducted at 2 sites from January 15, 2003, through June 6, 2006.			
Objective	To compare a tailored internet-based intervention with a tailored paper based intervention to improve physical activity in people overweight or obese.			
Country/ Setting	USA			
Number of participants / clusters	Participants (N=249 adults; mean [SD] age, 44.5 [9.3] years; and mean [SD] body mass index 29.4 [6.1]) were randomized to 1 of 3 physical activity interventions: (1) motivationally tailored Internet (tailored Internet, n=81), (2) motivationally tailored print (tailored print, n=86); and (3) 6 researcher-selected Websites available to the public (standard Internet, n=82).			
Attrition	Follow-up (i.e., the PAR interview) was completed by 89.2% of participants at 6 months and by 87.1% of participants at 12 months. There was no differential dropout between the groups			
Participant /community characteristics.		**Tailored print (n=86)**	**Tailored internet**	**Standard internet**
	Age, years mean (SD)	44.5 (9.6)	44.5 (9.0)	46.3 (9.4)
	Female, %	83.7	81.5	82.9
	White race, %	77.9	82.7	84.1
	BMI (kg/m2)	29.1 (6.2)	29.7 (6.5)	29.5 (5.5)
Method of allocation	Before randomization, participants completed the following: (1) telephone screening to establish eligibility, (2) an orientation session to obtain more information about the study, (3) a measurement session (i.e., body composition measures and resting electrocardiogram), and (4) an exercise test. A randomization session was then scheduled, in which participants learned their treatment assignment by opening an envelope created and administered to them by an individual not involved in assessment. Randomization was stratified on sex and baseline level of motivation and based on an urn model.12 This model allowed us to keep strata balanced without having to use fixed block size. The within-strata randomization assignments were generated in advance by a computer algorithm			
Inclusion criteria	Healthy sedentary (<90 minutes of physical activity each week) men and women 18 years and older were recruited, primarily through newspaper advertisements, from the Providence area (74.7% of the sample), and to increase the racial diversity of the sample, from Pittsburgh (25.3% of the sample).			
Exclusion criteria	(1) a history of coronary or valvular heart disease, hypertension, diabetes mellitus, chronic obstructive pulmonary disease, stroke, osteoarthritis, orthopaedic problems that would limit treadmill testing, or any other serious medical condition that would make physical activity unsafe or unwise; (2) consuming 3 or more alcoholic drinks per day on 5 or more days of the week; (3) current or planned			

Bibliographic reference/s	**Marcus BH, Lewis BA, Williams DM, Dunsiger S, Jakicic JM, Whiteley JA, Albrecht AE, Napolitano MA, Bock BC, Tate DF, Sciamanna CN, and Parisi AF (2007) A comparison of Internet and print-based physical activity interventions. Archives of internal medicine 167(9), 944-9**	
Study name	A Comparison of Internet and Print-Based Physical Activity Interventions	
	pregnancy; (4) planning to move from the area within the next year; (5) current suicidal ideation or psychosis; (6) current clinical depression and/or hospitalization because of a psychiatric disorder in the past 6 months; and (7) taking medication that may impair physical activity tolerance or performance and/or previous participation in one of our exercise trials. Participants read and signed a consent form approved by both sites' institutional review boards.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	
	Rationale/theory/Goal	
	Materials used	Educational materials and "tips" for adopting and maintaining physical activity were also included on the tailored Web site.
	Procedures used	Tailored Internet Arm Participants were prompted to log into the study Web site, which included evidence-based physical activity educational and motivational materials, a goalsetting function, and links to other sites. Tailored print arm Participants randomized to the tailored print arm received the same information, behavioural strategies, and monthly payment on the identical timeline as the tailored Internet arm; however, the intervention was delivered through the mail instead of through the Internet. For example, participants were prompted to complete questionnaires through the mail rather than through the Internet and completed physical activity logs via paper-and-pencil calendars Standard Internet arm Participants completed questionnaires and physical activity logs at the same intervals as the other 2 groups but did not receive the tailored feedback reports. Instead, participants accessed a study Web page that contained links to 6 physical activity Web sites available to the public. Web sites selected based on reputation, accuracy of information, inclusion of some assessment tools, and inclusion of some behavioural (e.g., overcoming barriers) and cognitive (e.g., physical activity benefits) strategies.

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Marcus BH, Lewis BA, Williams DM, Dunsiger S, Jakicic JM, Whiteley JA, Albrecht AE, Napolitano MA, Bock BC, Tate DF, Sciamanna CN, and Parisi AF (2007) A comparison of Internet and print-based physical activity interventions. Archives of internal medicine 167(9), 944-9</td></tr>
<tr><td>Study name</td><td colspan="2">A Comparison of Internet and Print-Based Physical Activity Interventions</td></tr>
<tr><td rowspan="6"></td><td>Provider</td><td>Tailored website (online)</td></tr>
<tr><td>Digital platform</td><td>Tailored website (online)</td></tr>
<tr><td>Location</td><td>Tailored website (online)</td></tr>
<tr><td>Duration</td><td>In the tailored internet arm E-mail prompts to access the Web site were sent weekly during month 1, biweekly during months 2 and 3, and monthly during months 4 through 12. In addition, participants were prompted via e-mail to complete monthly questionnaires online and received immediate tailored feedback according to their responses.</td></tr>
<tr><td>Intensity</td><td>See above</td></tr>
<tr><td>Tailoring/adaptation</td><td>The tailored feedback was based on the transtheoretical model (i.e., stage of readiness to change) and social cognitive theory (e.g., increasing confidence). Participants also set physical activity goals and completed online physical activity logs documenting their daily physical activity.</td></tr>
<tr><td>Planned treatment fidelity</td><td>-</td></tr>
<tr><td>Actual treatment fidelity</td><td>-</td></tr>
<tr><td></td><td>Other details</td><td>Participants in the tailored internet arm were paid $10 each month as partial compensation for their time spent completing the questionnaires.</td></tr>
<tr><td>Follow up</td><td colspan="2">6 and 12 months</td></tr>
<tr><td>Data collection</td><td colspan="2">PA per week was assessed using an interviewer administered 7-day physical activity recall (PAR). Participants also completed a graded submaximal treadmill exercise test using a Balke15 protocol, however this objective data on fitness level was not extracted as it did not provide any outcomes of interest (for example it provided Vo2 max)</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Outcomes by Group (median values unless stated otherwise):
<table>
<tr><th></th><th>Tailored print (n=86)</th><th>Tailored internet (n=81)</th><th>Standard internet (n=82)</th><th>P value</th></tr>
<tr><td colspan="5">Moderate to vigorous PA, min/wk</td></tr>
<tr><td>6 months</td><td>112.5</td><td>120.0</td><td>90.0</td><td>.15</td></tr>
<tr><td>12 months</td><td>90.0</td><td>90.0</td><td>80.0</td><td>.74</td></tr>
<tr><td colspan="5">Those reporting at least 150 min/wk of PA, %</td></tr>
<tr><td>6 months</td><td>37.2</td><td>44.4</td><td>36.6</td><td>.52</td></tr>
<tr><td>12 months</td><td>32.6</td><td>39.5</td><td>30.5</td><td>.45</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Marcus BH, Lewis BA, Williams DM, Dunsiger S, Jakicic JM, Whiteley JA, Albrecht AE, Napolitano MA, Bock BC, Tate DF, Sciamanna CN, and Parisi AF (2007) A comparison of Internet and print-based physical activity interventions. Archives of internal medicine 167(9), 944-9**		
Study name	A Comparison of Internet and Print-Based Physical Activity Interventions		
Important outcomes measures and effect size. (time points)	**Internet usage:** The number of Internet logins completed by the 2 Internet-based treatment conditions was positively skewed and, therefore, summaries are written as medians. Using the Wilcoxon rank sum (Mann-Whitney) test, we found that the tailored Internet arm logged onto the study Web site significantly more times during the study compared with the standard Internet arm (50 vs 38; z=−2.21, P=.03). We used quantile regression to examine the association between the number of logins and change in the PAR. To make the number of logins more symmetric, we included the natural log transformation as a covariate in our model. An increase in the log transformation of the number of logins was associated with an increase in median change in physical activity from baseline to 12 months, controlling for treatment group and baseline physical activity (B=34.32; 95% CI, 14.33-54.31).		
Statistical Analysis	The sample size for the present study was based on the assumption of a 30-minute difference at 12 months between the tailored Internet and the tailored print arms, assuming a 1% type I error rate (0.01) and 90% power. The primary dependent variable for analysis was median change in minutes of physical activity per week, as reported on the 7-day PAR, from baseline to 6 months and from baseline to 12 months (i.e., change scores). The PAR was positively skewed, so summaries were written in terms of medians and interquartile ranges. We conducted an intent-to-treat analysis and, in the event of missing data, we carried forward baseline values. Quantile regression was used to compare change in the PAR across the 3 intervention arms, controlling for baseline levels of activity.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low	Randomisation by computer present. No information on concealment. No significant differences between the 3 study arms on the demographic and baseline variables
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	Blinding not present (participants learned their treatment assignment by opening an envelope created and administered to them by an individual not involved in assessment) No information on deviations from intended interventions.
	Risk of bias due to deviations from intended interventions (adherence)	Low	High retention rates throughout the study period.

Bibliographic reference/s	**Marcus BH, Lewis BA, Williams DM, Dunsiger S, Jakicic JM, Whiteley JA, Albrecht AE, Napolitano MA, Bock BC, Tate DF, Sciamanna CN, and Parisi AF (2007) A comparison of Internet and print-based physical activity interventions. Archives of internal medicine 167(9), 944-9**		
Study name	A Comparison of Internet and Print-Based Physical Activity Interventions		
	Missing outcome data	Low	Follow-up (i.e., the PAR interview) was completed by 89.2% of participants at 6 months and by 87.1% of participants at 12 months.
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no blinding)
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		X
	Social support		
	Self-belief		X
	Comparison of outcomes		
	Comparison of behaviours		
	Identity		
	Shaping knowledge		
	Regulation		

Murray et al 2019

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**	
Study name	PAL Scheme	
Registration	ISRCTN17975376	
Study type	cRCT	
Study dates	September 2014 to February 2018	
Objective	The objectives of this paper were to determine whether levels of engagement in different components of the intervention predicted physical activity measured 6 months post baseline for participants assigned to the intervention group, (2) to determine whether levels of engagement in different components of the intervention predicted psychosocial variables (i.e. mediators) targeted by the intervention at 6 months post baseline, and (3) to investigate rates of non-usage attrition for participants recording daily activity via the Physical Activity Loyalty (PAL) scheme physical activity monitoring system and logging onto the PAL scheme website and baseline predictors of non-usage attrition (i.e. sociodemographic, mediator, environmental, and physical activity variables) for participants in the intervention group. This publication is an analysis of only the intervention group of a parallel cluster RCT to assess the objectives listed above.	
Country/ Setting	UK workplaces	
Number of participants / clusters	N=457 in 19 clusters	
Attrition	At 6 months, 49 (11%) were lost to follow-up.	
Participant /community characteristics.		**Intervention group**
	Gender women, n (%)	329 (72)
	Age, years, mean (SD)	44 (9.3)
	Income >£20k pa, n (%)	341 (75)
	Education some higher level; n (%)	295 (65)
	BMI, mean kg/m^2	27.2 (5.6)
	Marital status married/co-habiting, n (%)	313 (68)

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**		
Study name	PAL Scheme		
Method of allocation	Clusters were the smallest work groups or units (e.g. a large open plan office) within each participating organisation. A random allocation sequence was drawn up by the trial statistician and group allocation was stratified to ensure a similar number of clusters in both Intervention and control groups. Research staff were blinded to group allocation until after data collection was completed. The outcome of the randomisation was communicated to participants by email after the baseline assessment.		
Inclusion criteria	Based at recruited worksite at least four hours/day (within core hours of 8 am-6 pm) on at least three days/week Current contract anticipated to last for the duration of the study (i.e. to exclude temporary workers) Access to internet at work Able to give informed consent Able to communicate in English No self-reported recent history of myocardial infarction or stroke or physical limitations that would limit ability to participate in physical activity (assessed using the Physical Activity Readiness Questionnaire)		
Exclusion criteria			
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	PAL Scheme	
	Rationale/theory/Goal	The multicomponent intervention is similar to the concepts that underpin a high-street loyalty card and is aimed at encouraging repeated behaviour.	
	Materials used	Points and rewards are given for meeting physical activity targets. Integrated novel physical activity remote tracking system with web-based monitoring and behaviour change tools, including self-monitoring and goal setting.	
	Procedures used	*Intervention* Sensors (wifi beacons) were placed in the vicinity of participating workplaces at specific locations to encourage physical activity within a 2km radius of the worksite, including prompts and cues to facilitate habit formation. Participants were encouraged to undertake 150 mins/week of physical activity. Walking routes and activities tailored to the workplace were provided on the website. Activity was logged when participants walked within 25m of a beacon. Minutes were converted to points (1 point for 1 min of physical activity with a notional monetary value of £0.03 for a	

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**	
Study name	PAL Scheme	
		maximum of 30 min per day). 'Double Points Days' were awarded when physical activity goals were met. To increase motivation, behaviour change and intrinsically motivated behaviour, regular tailored motivational emails, tailored feedback, information on walking routes in the vicinity of the participating workplaces and links to other resources such as physical activity advice and healthy eating guidelines were sent. The 6 intervention components were: Monitoring and feedback – data and visual representation of activity Rewards – For viewing earned and bonus points, and information on available rewards Maps – sensor location and walking routes Health information (physical activity) – facts, information, benefits, and safety tips Health information (other) – healthy eating, smoking, alcohol consumption, stress reduction Discussion forum – for contacting researchers and other participants to questions, raise concerns and respond to comments
	Provider	
	Digital platform	Webpages on computers and smartphones.
	Location	Workplace
	Duration	6 months
	Intensity	Daily interaction
	Tailoring/adaptation	Tips for physical activity and opportunities were tailored to participants
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up	6 and 12 months	
Data collection	The following outcome measurements were recorded: Percentage of intervention days during which participants walked for at least 10 min captured via the PAL scheme physical activity monitoring system over the 6-month intervention period. Percentage of intervention weeks during which participants logged onto the PAL website at least once over the 6-month intervention period (Web-based intervention is meant to be used once a week, and previous studies have categorized a log-in frequency of once per week as being high. Therefore,	

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**
Study name	PAL Scheme
	engagement was measured in terms of weeks, and only weeks during which participants logged in at least once were counted). Percentage of earned points redeemed over the 6-month intervention period. Engagement with the different aspects of the PAL website was assessed as the frequency of hits on each intervention component for every 10 days the participant accessed the website and the total number of intervention components accessed on the website at least once (range 0-6). Non-usage attrition was considered to occur if a participant had at least a 2-week lapse from use. The primary outcome was steps per day objectively measured over 7 days using sealed pedometers (Yamax Digiwalker CW-701, Japan). The primary outcome assessment was distinct from the data collected from the PAL physical activity monitoring system. Predictors of non-usage attrition were sociodemographic, mediator, and environmental variables (assessed by questionnaire) and physical activity measures (pedometer steps per day) collected at baseline. Sociodemographic variables included age, gender, highest educational level, income, marital status, and self-reported height and weight (used to compute body mass index). Mediator variables included outcome expectations, physical activity self-efficacy, intention, planning, financial motivation, self-determined motivation (ie, identified regulation, integrated regulation, and intrinsic motivation), habit, recovery and maintenance self-efficacy, outcome satisfaction, and social norms and workplace norms.
Critical outcomes measures and effect size. (time points)	Descriptive statistics for 6-month engagement and non-usage attrition:

Engagement	**n**	**Intervention, mean (SD)**
Percentage (SD) of intervention days participants walked for at least 10 min captured via the physical activity monitoring system[a]	422	24.7 (21.8)
Percentage (SD) of intervention weeks participants logged onto the website[b]	418	37.8 (32.5)
Percentage (SD) of earned points redeemed[c]	422	39.3 (42.5)
Engagement		
Frequency: Monitoring and feedback[d]	418	13.7 (3.5)

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**		
Study name	PAL Scheme		
	Frequency: Rewards[d]	418	5.7 (4.5)
	Frequency: Maps[d]	418	3.4 (4.0)
	Frequency: Health information (physical activity)[d]	418	0.5 (1.7)
	Frequency: Health information (other)[d]	418	1.2 (3.2)
	Frequency: Discussion forums[d]	418	1.9 (4.2)
	Total number of sections (website)[e]	418	3.9 (1.5)
	Total minutes (recording daily activity via physical activity monitoring system)	422	1000 (987)
	Total minutes (PAL[f] website)	418	418 (2048)
	Non-usage attrition		
	Days to nonusage attrition (recording daily activity via physical activity monitoring system)[g]	422	53.7 (61.2)
	Days to nonusage attrition (PAL website)[h]	418	31.7 (43.4)
	Number of participants with non-usage attrition for recording daily activity via physical activity monitoring system, n (%)	-[i]	375 (88.9)
	Number of participants with PAL website non-usage attrition, n (%)	-	403 (96.4)
	[a]Percentage of days participants were recorded walking for at least 10 mins captured via the physical activity monitoring system. *[b]Percentage of weeks participants logged onto the website at least once.* *[c]Percentage of total accumulated points which the participant had redeemed by 6 months.*		

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**
Study name	PAL Scheme

[d]Frequency of hits (i.e. total number of hits for every 10 days the participant accessed the website).
[e]Number of sections accessed on website at least once (0-6).
[f]PAL: Physical Activity Loyalty.
[g]Number of days until first 2-week lapse from recording daily activity via physical activity monitoring system.
[h]Number of days until first 2-week lapse from logging onto the website.
[i]Not applicable.

Activity	**n**	
Pedometer steps per day	414	Baseline: 7977 (3602) 6m: 6990 (3078)

Engagement indicators for steps/day	**n**	**B (SE)**	**p[b]**	**n**	**B (SE)**	**p[b]**
	Univariable			**Multivariable[a]**		
Overall engagement						
Percentage of intervention days participants walked for at least 10 min captured via the physical activity monitoring system[c]	231	4.2 (8.5)	0.62	-[d]	-	-
Percentage of intervention weeks participants logged onto the website[e]	234	4.4 (6.0)	0.47	-	-	-
Percentage of earned points redeemed[f]	231	8.3 (4.1)	0.04	230	9.1 (3.3)	0.005
Engagement in specific aspects of website						
Monitoring and feedback[g]	234	66.3 (18.5)	<0.001	230	50.2 (24.5	0.04
Rewards[g]	234	13.9 (36.0)	0.70	-	-	-
Maps[g]	234	-46.9 (43.7)	0.28	-	-	-
Health information: PA[g]	234	34.9 (160.0)	0.83	-	-	-
Health information: other[g]	234	25.2 (65.9)	0.70	-	-	-

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**
Study name	PAL Scheme

Discussion forums [g]	234	-77.4 (27.1)	0.004	230	-69.3 (26.6)	0.009
Number of sections[h]	234	-32.4 (117.4)	0.78	-	-	-

[a]R-squared=0.54 for multivariable model. R-squared=0.51 for model including covariates only (ie, stratum, season, and baseline pedometer steps per day). Empty cells in this column show variables which were not included in the multivariable model.
[b]P values reported in italics show statistically significant results (P<.05).
[c]Percentage of days participants were recorded walking for at least 10 min captured via the physical activity monitoring system.
[d]Not applicable.
[e]Percentage of weeks participants logged onto the website at least once.
[f]Percentage of total accumulated points that the participant had redeemed by 6 months.
[g]Frequency of hits (ie, total number of hits for every 10 days the participant accessed the website).
[h]Number of sections accessed on website at least once (0-6).

Important outcomes measures and effect size. (time points)	
Statistical Analysis	Objective 1: To Determine Whether Levels of Engagement in Different Components of the Intervention Predicted Physical Activity Measured 6 Months Post Baseline for Participants Assigned to the Intervention Group Random-effects generalized least-squares regressions were run with 6-month physical activity (i.e. pedometer steps per day) as the dependent variable and engagement variables (i.e. percentage of intervention days in which participants undertook at least 10 min of physical activity captured using the PAL scheme physical activity monitoring system, percentage of intervention weeks participants logged onto the PAL website, percentage of earned points redeemed, frequency of hits on each of the 6 website intervention components for every 10 days the participant accessed the website, and total number of website sections accessed at least once) as the independent variables. The model was adjusted for randomization stratum (large>50, medium=20-50, small<20 or schools or colleges), season (6-month follow-up occurred between December 2015 and April 2016 versus 6-month follow-up occurred between July 2016 and August 2016), and baseline pedometer steps per day with SEs and P values adjusted for clustering (3 clusters based on size and 1 cluster for educational establishments). Random-effects models explicitly modelled the dependence between observations within the same cluster by including the random effect. This represented the amount by which the intercept for a given cluster differed from the overall mean intercept value. Engagement variables showing a significant relationship with 6-month physical activity in univariable analyses (P<.05) were included in a multivariable model with backward elimination of the predictor with the highest P value until all included predictors had P<.05. This determined the combined effects of all relevant predictors on

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**		
Study name	PAL Scheme		
	6-month physical activity. The distributions of residuals for each regression were plotted to check for normality. Partial regression plots were used to identify influential points, and homogeneity of variances was checked by graphing residual versus fitted values. Objective 2: To Determine Whether Levels of Engagement in Different Components of the Intervention Predicted Psychosocial Variables (i.e. Mediators) Targeted by the Intervention at 6 Months Post Baseline Random-effects generalized least-squares regressions were run with 6-month mediators as the dependent variable and engagement variables (i.e. percentage of intervention days in which participants undertook at least 10 min of physical activity captured using the PAL scheme physical activity monitoring system, percentage of intervention weeks participants logged onto the PAL website, percentage of earned points redeemed, frequency of hits on each of the 6 website intervention components for every 10 days the participant accessed the website, and total number of website sections accessed at least once) as the independent variables. These analyses used the same procedures outlined under Objective 1 and additionally included baseline values of the relevant mediator as a covariate.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Bias arising from the timing of identification and recruitment of participants	Low	Randomisation present. All participants identified and recruited before randomisation.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Participants may be aware they were in a trial. Deviations not possible and ITT analyses used.
	Risk of bias due to deviations from intended interventions (adherence)	NA	NA
	Missing outcome data	Low	Participants may have
	Risk of bias in measurement of the outcome	Some concerns	Assessment of outcome by participants may have been biased by knowledge of being in a trial. Many analyses look at the effect of baseline characteristics and usage of different components of the intervention on steps per day, and therefore would be equally affected by inflated outcome

Bibliographic reference/s	**Murray JM; French DP; Patterson CC; Kee F; Gough A; Tang J; Hunter RF (2019) Predicting Outcomes from Engagement With Specific Components of an Internet-Based Physical Activity Intervention With Financial Incentives: Process Analysis of a Cluster Randomized Controlled Trial. Journal of Medical Internet Research. 21(4): e11394.**		
Study name	PAL Scheme		
			reporting. Adjustments were made for clustering.
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments			
Additional references	Any other publications which have contributed evidence to this data extraction for the study		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat	x	
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	x	
	Goals and planning	x	
	Social support	x	
	Self-belief	x	
	Comparison of outcomes		
	Identity		
	Shaping knowledge	x	
	Regulation		
	Comparison of behaviour		

Olson et al 2018

Bibliographic reference/s	**Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148**
Study name	The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial
Registration	NCT01331564, ClinicalTrials.gov.

Bibliographic reference/s	**Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148**		
Study name	The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial		
Study type	RCT, pregnant women		
Study dates	May 2011 to July 2012		
Objective	The purpose of this study was to evaluate, in a real-world setting, the effectiveness of a self-directed, integrated online and mobile phone behavioural intervention in preventing excessive GWG. This effectiveness trial was a double-blind, three-arm trial with a parallel group design. Two arms received the same e-health intervention during pregnancy with the third arm serving as the placebo control.		
Country/ Setting	Pregnant women were screened by research staff in prenatal clinics, private obstetric practices, ultra-sound offices, and over the phone and online in a large Northeastern US city from May 2011 through July 2012		
Number of participants / clusters	A sample of 1689 pregnant women was included in the intention-to treat (ITT) analysis		
Attrition	The study was designed to have 87% power to detect a 10-percentage point reduction from a control rate of 55% with a sample of 1641 (p = 0.0167, two-sided). 563 were analysed in the control group and 563 were analysed in the intervention group after losses to follow up.		
	Baseline characteristics of sample by treatment arm (n = 1689):		
Participant /community characteristics.		**Placebo control n = 563**	**Intervention n = 1126**
	18 to 24.99 y	167 (29.7)	358 (31.8)
	25 to 29.99 y	205 (36.4)	366 (32.5)
	30 to 34.99 y	191 (33.9)	402 (35.7)
	Initial BMI (kg/m2) Median (25th, 75th percentile)	24.7 (21.9, 28.3)	24.7 (22.0, 28.6)
	*Table entries are shown as frequency and percent of known values, n (%), unless specified differently.		
Method of allocation	This trial was a double-blind, three-arm randomized trial with a parallel group design with the individual as the unit of randomization and analysis.		
Inclusion criteria	Healthy pregnant women age 18-35 years with body mass indexes (BMI) ≥18.5 and < 35, at ≤20 weeks gestation, and an e-mail address were eligible		
Exclusion criteria	Exclusion criteria included body mass index (BMI) < 18.5 and ≥ 35 kg/m2, multiple gestation, weight-affecting medical or psychiatric conditions, and no e-mail address. The age limits were set by the Early Adult Reduction of Weight through LifestYle interventions (EARLY) consortium of weight management studies of which this trial was a part		
Intervention	**TIDieR Checklist criteria**	**Details**	

Bibliographic reference/s	**Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148**	
Study name	The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial	
	Brief Name	Self-directed, integrated online and mobile phone behavioural intervention
	Rationale/theory/Goal	evaluate the effectiveness of a self-directed, integrated mobile phone and online behaviour change intervention in preventing excessive GWG in a real-world setting.
	Materials used	Women in the intervention arms received access to three behaviour change tools including a weight gain tracker, a diet and a physical activity goal-setting and self-monitoring tool, as well as, health information including tips, articles, frequently asked questions; a description of pregnancy and parenting-related resources available in the local community; a blogging tool; and an event and appointment reminder. The placebo control arm received access to all the features above except the weight gain tracker and the diet and physical activity goal-setting and self-monitoring tools since the latter were hypothesized to be the active ingredients of the intervention.
	Procedures used	Participants assigned to the intervention arms received access to the intervention website and those assigned to the placebo control condition received access to the control website. Briefly, the self-directed, integrated online and mobile phone behavioural intervention was designed using the Integrative Model of Behaviour Prediction and the Behaviour Model for Persuasive Design.
	Provider	
	Digital platform	Two different suites of tools were made available to trial participants on a password protected study website and mobile phone platform
	Location	
	Duration	Unclear
	Intensity	Reminders and informational content, that differed by arm, were distributed weekly via e-mail messages to all participants. Women were reminded weekly to login, and they decided what, when, and how much they would use the tools made available to them.
	Tailoring/adaptation	Not reported
	Planned treatment fidelity	

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148</td></tr>
<tr><td>Study name</td><td colspan="2">The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial</td></tr>
<tr><td></td><td>Actual treatment fidelity</td><td>-</td></tr>
<tr><td></td><td>Other details</td><td>All women in the trial received standard prenatal care from their self-selected health care provider.</td></tr>
<tr><td>Follow up</td><td colspan="2"></td></tr>
<tr><td>Data collection</td><td colspan="2">The pre-specified primary outcome for evaluating the effectiveness of the intervention was the proportion of women with total GWG above the upper limit of the range for total GWG defined by the Institute of Medicine (IOM) for each BMI group. Total GWG was calculated as the difference between the first weight at < 14 weeks gestation and the last weight at ≥37 weeks in pregnancy. The binary outcome, the proportion of women with excessive total GWG, was determined by comparing the difference for each woman to the IOM upper limit for GWG range for each BMI group: normal BMI - > 16 kg; overweight BMI - > 11.5 kg; and obese class 1 BMI - > 9 kg. Excessive average weekly GWG in the last half of pregnancy and total GWG in kg were pre-specified secondary outcomes. Average weekly GWG was calculated as the difference between the last weight at ≥37 weeks of gestation and the weight nearest to 20 weeks gestation (+/− 2 weeks) divided by the number of weeks between the two weights. This value was defined as excessive if it exceeded the upper limit for weekly weight gain for each BMI group as specified by the IOM.

Adherence to the treatment protocol was defined as logging into the treatment arm specific project website at least once in each 45-day interval during pregnancy. This time interval was based on the schedule of prenatal care visits which are on average every 30 days during pregnancy. This level of adherence was considered as providing a minimal possibly effective dose of exposure to treatment</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Primary and secondary gestational weight gain (GWG) outcomes in the ITT sample:
<table>
<tr><td></td><td>Intervention*
n = 1126</td><td>Placebo control*
n = 563</td><td>Adjusted estimate**
(95% CI)</td><td>P value</td></tr>
<tr><td colspan="5">Primary outcome - % exceeding the upper limit of guidelines for total GWG</td></tr>
<tr><td>Intervention effect</td><td>48.1% (2.0%)</td><td>46.2% (2.4%)</td><td>1.09 (0.98, 1.20)</td><td>0.12</td></tr>
<tr><td>Intervention x Strata interaction (3df)</td><td></td><td></td><td></td><td>0.19</td></tr>
<tr><td colspan="5">Secondary outcome - % exceeding the upper limit of weekly GWG rate (kg/week)</td></tr>
<tr><td>Intervention effect</td><td>66.4% (2.0%)</td><td>67.9% (2.3%)</td><td>1.00 (0.94, 1.07)</td><td>0.90</td></tr>
<tr><td>Intervention x Strata</td><td></td><td></td><td></td><td>0.22</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148**
Study name	The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial

interaction (3df)				
Secondary outcome analysis- total GWG (kg)				
Intervention effect	13.73 (0.46)	13.73 (0.45)	0.10 (−0.58, 0.77)	0.78
Intervention x Strata interaction (3df)				0.16

*Results are pooled across imputed data sets and are unadjusted for other factors (n = 1689)

**Relative Risk (RR) estimates of excessive total and weekly GWG from log-binomial model for intervention vs placebo adjusted for strata, gestational age at delivery, continuous BMI, and two timing of weight measurement variables. For total GWG, the mean difference (kg) between intervention and placebo from least squares regression model was adjusted for strata, gestational age at delivery, continuous BMI, and two timing of weight measurement variables. The COPY method was used if any of the 60 log-binomial models did not converge

Important outcomes measures and effect size. (time points)

Engagement with treatment assignment (n = 1689):

Indicator of engagement*	Placebo control n = 563	Intervention n = 1126
Logged into study web site at least once, n (%)	473 (84.0)	946 (84.0)
Logged-in each 45 days of participation (adherent), n (%)	195 (34.6)	519 (46.1)
Number of days with access to website	199 (166, 220)	196 (161, 220)
Percent of access days with a login	3.2 (0.9, 6.7)	5.6 (0.2, 11.7)
Number of logins for treatment	6 (2, 14)	10 (2, 24)
Number of web page views	15 (2, 48)	24 (3,62)

*Table entries are median (25th percentile, 75th percentile) unless otherwise noted

Statistical Analysis

Missing data were handled using multiple imputation to address issues of bias which may result from analysing only complete cases [19]. Sufficient weight information for the calculation of the primary outcome required having a measured weight at both < 14 weeks and ≥ 37 weeks of gestation. If weight information was insufficient, the first, 20 week, and/or last weights were imputed using Statistical Analysis System (SAS) Proc MI. A previous evaluation of the non-electronic version of the intervention indicated that both income and BMI affected GWG outcomes, leading to the stratified randomization design for the present study.

Bibliographic reference/s	**Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148**		
Study name	The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low	Randomisation present. No difference in baseline variables between the groups.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Double-blind trial, both intervention arms were password protected
	Risk of bias due to deviations from intended interventions (adherence)	Low	High retention rates throughout the intervention period.
	Missing outcome data	Low	Intention to treat analysis
	Risk of bias in measurement of the outcome	Low	Objective outcome measures not effected
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Low	
	Other outcome details:	N/A	
Source of funding			
Comments	N/A		
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support	X	
	Self-belief		
	Comparison of outcomes		
	Comparison of behaviour		
	Identity		

Bibliographic reference/s	**Olson CM, Groth SW, Graham ML, Reschke JE, Strawderman MS, and Fernandez ID (2018) The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial. BMC pregnancy and childbirth 18(1), 148**	
Study name	The effectiveness of an online intervention in preventing excessive gestational weight gain: the e-moms roc randomized controlled trial	
	Shaping knowledge	
	Regulation	

Patrick et al 2011

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**		
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men		
Registration			
Study type	RCT, adult males		
Study dates	Participants were recruited from the community from February 2004 through March 2005		
Objective	This study assessed the effect of a 1-year internet-based weight loss intervention for overweight or obese men.		
Country/ Setting	USA		
Number of participants / clusters	Four hundred forty-one overweight and obese men were randomized to intervention or delayed treatment. Participants completed a Web-based assessment of diet and physical activity behaviours and weekly tailored Web modules addressing weight-related behaviours.		
Attrition	An anticipated sample size of 215 participants per group allowed for 20% attrition over the 12-month period and provided 80% power to detect a standardized effect size of 0.27 or greater. Of 522 eligible men, 84% (n=441) signed consent forms, completed the baseline assessment, and were randomized. Forty-five (10%) men withdrew their participation from the study by 12 months. An additional 87 (20%) men did not actively withdraw from the study, but either could not be reached or were not willing to be assessed at 12 months. Completion of the 12-month assessment (70%) did not vary by treatment group		
Participant /community characteristics .		Intervention group (n = 224)	Control group (n = 217)
	Age, mean (SD)	44.9 (7.8)	42.8 (8.0)
	Overweight (25–29.9) N (%)	38 (17.0)	31 (14.4)

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**			
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men			
	Obesity I (30–34.9)	91 (40.6)	93 (42.9)	
	Obesity II (35–39.9)	75 (33.5)	74 (34.1)	
	Obesity III (>40)	20 (8.9)	19 (8.8)	
Method of allocation	A computer-generated randomisation procedure was employed, using the software package 'minim'. Participants were allocated to groups by the programme according to the minimisation criteria, i.e. balanced for gender (male/female), age group (18–34, 35–49, 50+) and BMI category (30–33.9, 34–37.9, 38+). Due to the pragmatic nature of the trial and the intervention being evaluated, it was not possible to blind either the participants or researchers to the group assignment.			
Inclusion criteria	Participating men were 25 to 55 years old (M=43.9, SD 8.0) with BMI of at least 25 kg/m^2 (overweight or obese).			
Exclusion criteria	Not specified			
Intervention	**TIDieR Checklist criteria**		**Paper/Location**	**Details**
	Brief Name			
	Rationale/theory/Goal		The intervention was based primarily on social cognitive theory and also informed by the behavioural determinants model, an approach that describes the social cognitive theory related behavioural correlates of exercise. The intervention was designed to influence factors hypothesized to lead to behaviour change such as goal setting, use of behavioural skills, and increasing social support and self-efficacy.	
	Materials used		Intervention men were given pedometers (Yamax Digiwalker) to assist in self-monitoring daily steps and were encouraged to input the data on the web site to assist with goal setting. Men also reported minutes spent in physical activities not measurable by a pedometer (e.g., swimming, cycling, and activities in settings such as gyms) enabling manual entry of activities unlinked to actual step counts	
	Procedures used		**Intervention:**	

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**	
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men	
		To promote weight loss, the intervention was designed to improve diet and physical activity behaviours in five areas: (a) increased fruit and vegetable intake to five to nine or more servings per day; (b) increased consumption of whole grain products to more than or equal to three servings per day; (c) decreased saturated fat intake to ≤20 g per day through the use of strategies such as substitution, reducing portion size, decreasing frequency, or changing cooking methods; (d) increasing steps per day to at least 10,000 on at least 5 days/week; and (e) strength training at least two times per week targeting at least two body areas (upper body, core, lower body). The intervention consisted of three components, an initial computerized assessment to tailor recommendations for behavioural targets, weekly Web-based learning activities, and individualized feedback on their progress The intervention included theory-based tailoring of content and was informed by frequent reassessment of health behaviours, and it offered personalized feedback. **Waitlist control:** Subjects given access to an alternate web site containing general health information of interest to men but not likely to lead to changes in diet or physical activity behaviours (e.g., information on stress, hair loss, worksite injury prevention). At the end of the 12 months, waitlisted men were given the option to cross over to the weight loss intervention.
	Provider	Intervention participants met at the study office with a “case manager” to orient them to the web site. Case managers did not provide intervention content but were available to address technical questions. The case manager had occasional e-mail, and, if necessary, telephone contact with participants to

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**	
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men	
		facilitate interaction with the web site and troubleshoot technical difficulties. Participants had an opportunity to e-mail a question to our study experts (dietitian, physical activity expert, clinical psychologist and selected questions and answers would be posted on the web site for all to see. Participants were encouraged, but not required, to take a printed copy of their goals to their health care provider and to discuss their goals and importance of weight loss.
	Digital platform	Website, internet
	Location	
	Duration	Over the 12 months, participants completed weekly Web-based activities, including learning about and applying theoretically derived behaviour change skills and reading about diet and physical activity topics. The web site included skill-building tools and physical activity and nutrition information and tips; a goal setting and reporting page where goals could be set on the target behaviours; progress graphs for each of the five behaviours; and relevant news stories that rotated every few weeks.
	Intensity	Not specified
	Tailoring/adaptation	Personalized graphical feedback was provided weekly and displayed improvements and instances where behaviours fell below previously attained levels.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	N/A
Follow up	6 and 12 months	
Data collection	Assessments were taken by trained assessors who were blinded to the treatment group. Body height was measured with an Accu-Hite® wall stadiometer model 216. Weight was measured using standard procedures with the digital Body Comp Scale™ from American Weights and Measures. Waist circumference was measured at the navel with a steel tape measure. Each measure was taken twice by trained assessors, and the average of the two readings was calculated. BMI was calculated as kilograms per square meters. Diet was measured using the	

<table>
<tr><td>Bibliographic reference/s</td><td>Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70</td></tr>
<tr><td>Study name</td><td>Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men</td></tr>
<tr><td></td><td>122-item Fred Hutchison Cancer Research Center Food Frequency Questionnaire at baseline, 6, and 12 months. This instrument, originally used in the Women’s Health Initiative, has acceptable measurement characteristics, and we used a version of the Food Frequency Questionnaire appropriate for men previously used in the Prostate Cancer Prevention Trial. Physical activity was measured using the International Physical Activity Questionnaire long version, a comprehensive assessment of health-related physical activity and sedentary behaviour in adults</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Intervention effects on anthropometric measures at 12 months (intent to treat analyses). Mean (SD):
<table>
<tr><th></th><th>Baseline</th><th>12 months</th><th>Between-group difference at 12 months adjusted for baseline value (95% CI)</th><th>P value</th></tr>
<tr><td colspan="5">Body mass index (kg/m^2)</td></tr>
<tr><td>Intervention</td><td>34.2 (4.2)</td><td>33.8 (4.5)</td><td rowspan="2">−0.266 (−0.535, 0.003)</td><td rowspan="2">0.053</td></tr>
<tr><td>Control</td><td>34.3 (4.0)</td><td>34.2 (4.2)</td></tr>
<tr><td colspan="5">Body weight (kg)</td></tr>
<tr><td>Intervention</td><td>104.7 (15.3)</td><td>103.8 (16.1)</td><td rowspan="2">−0.694 (−1.52, 0.135)</td><td rowspan="2">0.101</td></tr>
<tr><td>Control</td><td>104.6 (15.3)</td><td>104.4 (15.4)</td></tr>
</table>
Estimated means and standard errors from fitted maximum likelihood repeated measures mixed models under the MAR assumption for missing data:
<table>
<tr><th></th><th>Intervention</th><th>Control</th><th>P value</th></tr>
<tr><td>Outcome</td><td>Mean (SE)</td><td>Mean (SE)</td><td></td></tr>
<tr><td colspan="4">Servings of fruits and vegetables/1,000 kcal/day</td></tr>
<tr><td>Baseline (n=224)</td><td>1.31 (0.05)</td><td>1.31 (0.05)</td><td></td></tr>
<tr><td>6 months (n=152)</td><td>2.11 (0.09)</td><td>1.64 (0.09)</td><td><0.001</td></tr>
<tr><td>12 months (n=154)</td><td>2.11 (0.10)</td><td>1.73 (0.10)</td><td>0.002</td></tr>
<tr><td colspan="4">IPAQ total walking (min/day)</td></tr>
<tr><td>Baseline</td><td>61.54 (4.38)</td><td>61.21 (4.46)</td><td>0.014</td></tr>
<tr><td>6 months</td><td>84.75 (5.16)</td><td>65.31 (5.36)</td><td></td></tr>
<tr><td>12 months</td><td>85.62 (5.38)</td><td>69.93 (5.39)</td><td>0.049</td></tr>
<tr><td colspan="4">IPAQ square root MVPA MET (min/week)</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**			
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men			
	Baseline	52.51 (1.99)	52.24 (2.02)	
	6 months	56.91 (2.22)	53.96 (2.29)	0.375
	12 months	57.95 (2.31)	53.28 (2.32)	0.148
Important outcomes measures and effect size. (time points)	N/A			
Statistical Analysis	For BMI, body weight, and waist circumference outcomes, which were measured at baseline and 12-months, analyses were conducted as intent-to-treat by replacing missing values at the 12-month endpoint with the baseline value. Tests of between-group differences on these study outcomes used the 12-month values as dependent variables in the analysis of covariance (ANCOVA) models adjusting for the baseline value. For the behavioural outcomes, maximum likelihood repeated measures models tested between group differences over time. Analyses were conducted using all available data at baseline (n=441), 6 months (n=291, 66%), and 12 months (n=309, 70%) assuming data were missing at random (MAR).			
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**	
	Risk of bias arising from the randomisation process	Low	Randomisation present by computer. No information on concealment. Treatment groups did not differ statistically by age category, ethnicity, education level, marital status, or BMI at baseline. However, men in the intervention group were slightly older than men in the control group (p=0.063).	
	Risk of bias due to deviations from intended interventions (assignment)	Low	Blinding was not feasible due to nature of trial.	
	Risk of bias due to deviations from intended interventions (adherence)	Low	None specified.	

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**		
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men		
	Missing outcome data	Some concerns	Low overall retention and differential dropout, with Hispanic and more severely obese men less likely to complete 12-month assessments. The power was not achieved. However, the two outcome analysis strategies for handling missing data generated comparable results.
	Risk of bias in measurement of the outcome	Low	Intervention assessors were blinded to the treatment. Each measure was taken twice by trained assessors, and the average of the two readings was calculated
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments			
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		

Bibliographic reference/s	**Patrick Kevin, Norman Gregory J, Davila Evelyn P, Calfas Karen J, Raab Fred, Gottschalk Michael, Sallis James F, Godbole Suni, and Covin Jennifer R (2013) Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. Journal of diabetes science and technology 7(3), 759-70**	
Study name	Outcomes of a 12-Month Web-Based Intervention for Overweight and Obese Men	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	
	Social support	X
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	X
	Regulation	
	Comparison of behaviour	

Polgreen et al. 2018

Bibliographic reference/s	**Polgreen LA, Anthony C, Carr L, Simmering JE, Evans NJ, Foster ED, Segre AM, Cremer JF, and Polgreen PM (2018) The effect of automated text messaging and goal setting on pedometer adherence and physical activity in patients with diabetes: A randomized controlled trial. PLoS ONE 13(5), e0195797**
Study name	-
Registration	Not reported
Study type	3 arm RCT
Study dates	Recruitment started on March 25th, 2014 and ended on January 16, 2015. The study ended on July 23, 2015.
Objective	To determine if automatic text-message reminders +/- goal setting would improve Fitbit adherence and/or increase PA levels long-term in people with type 2 diabetes mellitus.
Country/ Setting	Iowa, USA; unclear setting.
Number of participants / clusters	138 subjects were randomised, consented and enrolled, with 48 in the Fitbit-only group, 44 in the reminders group and 46 in the goal setting group. To achieve 80% power to detect an effect size of at least 0.25, 47 subjects per arm were required, also assuming a loss of 25% of days data due to non-compliance, and an alpha 0.025. In anticipation of dropouts, 50 subjects per arm were aimed to be recruited.
Attrition	37 (26.7%) of subjects did not attend the 6-month follow up visit (12 in Fitbit group, 10 in the reminders group, 15 in the goal-setting group). Of the possible 28,840 person-days, 15,593 (54.1%) had at least 20 minutes of movement recorded.

<table>
<tr><td>Bibliographic reference/s</td><td colspan="4">Polgreen LA, Anthony C, Carr L, Simmering JE, Evans NJ, Foster ED, Segre AM, Cremer JF, and Polgreen PM (2018) The effect of automated text messaging and goal setting on pedometer adherence and physical activity in patients with diabetes: A randomized controlled trial. PLoS ONE 13(5), e0195797</td></tr>
<tr><td>Study name</td><td colspan="4">-</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="4">
<table>
<tr><th></th><th>Fitbit only, n=48</th><th>Reminders, n=44</th><th>Goal setting, n=46</th></tr>
<tr><td>Male, n (%)</td><td>12 (25.5)
n=47</td><td>10 (22.7)</td><td>10 (21.7)</td></tr>
<tr><td>Age (years), mean (SD)</td><td>44.6 (16.7)
N=42</td><td>47.4 (15.1)
N=40</td><td>43.0 (16.0)
N=38</td></tr>
<tr><td>BMI (kg/m^2), mean (SD)</td><td>37.8 (6.8)</td><td>36.5 (5.8)</td><td>37.7 (6.6)</td></tr>
<tr><td>Blood pressure (mmHg), mean (SD)
-Systolic
-Diastolic</td><td>
132.0 (13.2)
75.2(8.2)</td><td>
135.6 (15.8)
77.2 (9.0)</td><td>
137.2 (11.4)
80.0 (9.3)</td></tr>
<tr><td>Insulin sensitivity check index, mean (SD)</td><td>0.14 (0.01)
N=43</td><td>0.14 (0.01)
N=37</td><td>0.14 (0.01)
N=44</td></tr>
</table>
Specific sample sizes are given where missing values are present
All baseline characteristics are comparable across groups other than diastolic blood pressure (ANOVA p-value = 0.032)</td></tr>
<tr><td>Method of allocation</td><td colspan="4">150, 3-digit random numbers were generated, and when an eligible participant was identified they were given the next available random number (i). Group assignment was determined by g=i mod 3. Subjects with g=0 were assigned to the Fitbit only group, g=1 were assigned to the reminders group and subjects with g=2 were assigned to the goal setting group.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="4">Adults aged 19 to 75; obese (BMI >30); fasting glucose of 100 or higher in the last year, or diagnoses with type 2 diabetes but were not currently taking insulin; access to the internet through a computer or smartphone.</td></tr>
<tr><td>Exclusion criteria</td><td colspan="4">Active or acute mental health problems, significant cognitive impairment, lack of fluency in speaking or understanding English, pregnancy, or contraindications to PA.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td colspan="3">Details</td></tr>
<tr><td></td><td>Brief Name</td><td colspan="3">-</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td colspan="3">Goal setting</td></tr>
<tr><td></td><td>Materials used</td><td colspan="3" rowspan="2">All subjects were given a Fitbit Zip (wearable, triaxial accelerometer).
The Fitbit website provides users with activity summaries.
All subjects were given a 40-page brochure about healthy weight loss from the National Institutes of Health.</td></tr>
<tr><td></td><td>Procedures used</td></tr>
</table>

Bibliographic reference/s	**Polgreen LA, Anthony C, Carr L, Simmering JE, Evans NJ, Foster ED, Segre AM, Cremer JF, and Polgreen PM (2018) The effect of automated text messaging and goal setting on pedometer adherence and physical activity in patients with diabetes: A randomized controlled trial. PLoS ONE 13(5), e0195797**	
Study name	-	
		3 groups: • Fitbit only – received no extra information or sent any messages • Fitbit with reminders – single daily text message reminding them to wear and sync their Fitbit if they had not worn it the previous day • Fitbit with reminders and goal setting – received daily goal-setting text messages, receiving a morning message regarding the previous day's activity and were asked to set a goal for the current day. If the Fitbit had not been worn the day before, a reminder to wear and a goal setting text was sent. Subjects responded with the number of steps they planned to take.
	Provider	Virtual - text message
	Digital platform	Text message
	Location	-
	Duration	6 months
	Intensity	Subjects were instructed to wear Fitbits each day for 6 months, with 1 text message received every day.
	Tailoring/adaptation	Bi-directional text messaging used uploaded Fitbit data to tailor messages according to how many steps were taken the previous day. Subjects could choose what time in the morning they received messages.
	Planned treatment fidelity	-
	Actual treatment fidelity	Of the possible 28,840 person-days, 15,593 (54.1%) had at least 20 minutes of movement recorded.
	Other details	-
Follow up	6 months	
Data collection	Fitbit data was automatically uploaded from the Fitbit to the participants profile via an antenna on the USB port or Bluetooth onto a smartphone. Non-wear of the Fitbit was counted as 0 steps recorded. All groups conducted 3 in-person tests (baseline, 3 months and 6 months). At baseline and 6 months, weight and height, fasting glucose and fasting insulin levels were measured. Weight and blood were also measured at 3 months.	

<table>
<tr><td>Bibliographic reference/s</td><td>Polgreen LA, Anthony C, Carr L, Simmering JE, Evans NJ, Foster ED, Segre AM, Cremer JF, and Polgreen PM (2018) The effect of automated text messaging and goal setting on pedometer adherence and physical activity in patients with diabetes: A randomized controlled trial. PLoS ONE 13(5), e0195797</td></tr>
<tr><td>Study name</td><td>-</td></tr>
<tr><td>Critical outcomes measures and effect size</td><td>
<table>
<tr><th></th><th>Fitbit only (n=48)</th><th>Fitbit with reminder texts (n=44)</th><th>Fitbit with reminder and goal setting texts (n=46)</th></tr>
<tr><td>Number of daily steps, mean (SD)</td><td>7123 (4287)</td><td>6854 (3949)</td><td>6909 (3748)</td></tr>
<tr><td>Compliance to wear Fitbit compared with Fitbit only, %</td><td>-</td><td>17 (95% CI 4.8 to 29.4)</td><td>6.1 (95% CI -5.2 to 17.9)</td></tr>
</table>
Average BMI did not change over the course of the study for any group: the mean BMI was 37.12 at baseline and 37.16 at follow-up.

Regression analysis for daily step count, including 129 participants and 15,593 person-days. Covariates include dummy variables for group membership, the number of days since enrolment and group membership interacted with relative date. Estimates are adjusted for month of observation.
<table>
<tr><th>Effect</th><th>Estimate (95% CI)</th></tr>
<tr><td>Intercept</td><td>6,713.8 (5,965.2 to 7,473.1)</td></tr>
<tr><td>Relative date</td><td>-6.2 (-8.4 to -3.9)</td></tr>
<tr><td>Reminders vs Fitbit only</td><td>-342.8 (-1,347.3 to 664.8)</td></tr>
<tr><td>Goals vs Fitbit only</td><td>-182.1 (-1,229.1 to 812.7)</td></tr>
<tr><td>Relative Date * reminders</td><td>3.4 (-0.3 to 5.2)</td></tr>
<tr><td>Relative Date * goals</td><td>2.5 (0.8 to 6.0)</td></tr>
</table>
</td></tr>
<tr><td>Important outcomes measures and effect size</td><td>-</td></tr>
<tr><td>Statistical Analysis</td><td>Comparisons across treatment groups for baseline characteristics performed using chi-squared tests for categorical variables, or ANOVA for continuous variables. For variables that were significantly different among the 3 groups, pairwise comparisons were performed using 2-sample t-tests.
A linear mixed-effects model was used to describe the expected daily number of steps taken in each arm. The model included a random intercept by subject to account for between-subject differences and within-subject correlation of observations and fixed effects for the month of the year, the group membership, number of days since enrolment and the interaction between goal membership and number of days since enrolment.</td></tr>
</table>

Bibliographic reference/s	**Polgreen LA, Anthony C, Carr L, Simmering JE, Evans NJ, Foster ED, Segre AM, Cremer JF, and Polgreen PM (2018) The effect of automated text messaging and goal setting on pedometer adherence and physical activity in patients with diabetes: A randomized controlled trial. PLoS ONE 13(5), e0195797**		
Study name	-		
	Any records with fewer than 20 minutes of activity across an entire day or if there were no recorded steps were removed and set to missing.		
Risk of bias (ROB) Overall ROB	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Participants randomly allocated using computer generated random numbers.
	Allocation concealment	Some concerns	Due to nature of the study, participants could not be blinded to intervention group. Data collected was objective, however behaviour may have been altered according to knowledge of intervention group.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	No evidence of intervention contamination or deviation from assignment.
	Risk of bias due to deviations from intended interventions (adherence)	High risk	High attrition rates recorded, with only ~55% of possible person-days available with more than 20 minutes activity, which was pre-specified as a cut off to be as recorded as missing data. 25% non-adherence was estimated.
	Missing outcome data	High risk	Sample size did not reach pre-specified value of 150 (50 per group), therefore unlikely that adequately powered.
	Risk of bias in measurement of the outcome	Some concerns	Cut-off of activity of 20 minutes or less per day recorded as no activity, although no justification for this choice.
	Risk of bias in selection of the reported result	Low risk	No evidence of reporting bias

Bibliographic reference/s	**Polgreen LA, Anthony C, Carr L, Simmering JE, Evans NJ, Foster ED, Segre AM, Cremer JF, and Polgreen PM (2018) The effect of automated text messaging and goal setting on pedometer adherence and physical activity in patients with diabetes: A randomized controlled trial. PLoS ONE 13(5), e0195797**		
Study name	-		
	Other sources of bias	Some concerns	Subjects were compensated $25 for each of the 3 visits to the health centre and $15 if they returned the Fitbit at the end of the study.
	Overall Risk of Bias	High risk	
Source of funding	Fraternal Order of Eagles Diabetes Research Center Pilot and Feasibility Grant [PMP], the National Institute of Diabetes and Digestive and Kidney Disorders, grant #5R21DK108019 [PMP], The University of Iowa Health Ventures' Signal Center for Health Innovation [PMP], and the National Heart, Lung and Blood Institute, grant #K25 HL122405 [LAP]		
Comments	Estimates for the effect of setting a goal compared with not setting a goal were calculated, using the goal setting participants as their own controls, from days they failed to submit a goal. This data has not been extracted as it does not constitute a randomised controlled trial study methodology.		
Additional references	-		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning	X	
	Social support		
	Self-belief		
	Comparison of outcomes		
	Comparison of behaviour		
	Identity		
	Shaping knowledge		
	Regulation		

Santo et al 2018

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)
Registration	ACTRN12611000161921
Study type	RCT
Study dates	September 2011 and November 2013
Objective	The aims were to analyse the dietary data to: 1) assess the effects of the TEXT ME intervention on adherence to the dietary guideline recommendations, both combined and individually; 2) assess the consistency of effect of the TEXT ME intervention across sub-groups; and 3) assess whether adherence to the dietary guideline recommendations mediated the improvements in objective clinical outcomes in people with hypertension or CVD.
Country/ Setting	Australia, community/at home
Number of participants / clusters	N=710 352 in intervention group 358 in control group
Attrition	21 (2.9%) were not available at 6-month follow-up.

Participant /community characteristics.

	Intervention (n=352)	Control (n=358)	
Age (years), mean (SD)	57.9 (9.1)	57.3 (9.3)	
Male, n (%)	287 (81.5)	295 (82.4)	
Smoker, n (%)	184 (52.3)	193 (53.9)	
Diabetes, n (%)	111 (31.5)	118 (33.0)	
Hypertension, n (%)	222/352 (63.1)	218/358 (60.9)	
Ethnicity, n (%) European South Asian Other Asian Arab Other	 229/352 (65.1) 41/352 (11.6) 37/352 (10.5) 33/352 (9.4) 12/352 (3.4)	 244/358 (68.2) 35/358 (9.8) 35/358 (9.8) 37/358 (10.3) 7/358 (2.0)	
Total physical activity (MET min/wk), mean (SD)	283 (707)	474 (1926)	
Blood pressure, mmHg, mean (SD) Systolic Diastolic	 128.8 (12.3) 82.9 (7.5)	 128.7 (12.2) 82.9 (7.4)	

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.			
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)			
	BMI, mean (SD)	29.8 (6.0)	29.6 (5.9)	
	BMI >25 kg/m^2, n (%)	269/352 (76.4)	282/358 (78.8)	
	Waist circumference, cm	103.2 (15.6)	104.4 (16.9)	
	Hip circumference, cm	103.8 (15.9)	103.7 (16.1)	
Method of allocation	Randomization occurred via a computerized randomization program that was accessed through a secure web interface. The random allocation sequence was in a uniform 1:1 allocation ratio with a block size of 8 and was concealed from study personnel. Study staff enrolled patients by entering data into the secure web interface. The computerized randomization program interfaced with the message-sending program to trigger the sending of messages to patients randomized to the intervention. To maintain blinding of study personnel, patients were informed of their allocation in a text message sent after hospital discharge. Prior to their follow-up appointment patients also received a text message to ask them not to reveal their allocation status to study personnel or clinicians in follow-up visits.			
Inclusion criteria	>18 years old Documented CHD (prior myocardial infarction, coronary artery bypass graft surgery, percutaneous coronary intervention, or 50% or greater stenosis in at least 1 major epicardial vessel on coronary angiography) Able to provide informed consent			
Exclusion criteria	No mobile phone Insufficient English language proficiency to read messages Referred for evaluation of congenital heart disease or coronary anomalies were excluded			
Intervention	**TIDieR Checklist criteria**	**Details**		
	Brief Name	TEXT ME		
	Rationale/theory/Goal	Text-messaging can be a quick low-cost way of promoting CVD prevention by motivating and reinforcing a healthy eating habit.		
	Materials used	Messages provided advice, motivational reminders and support to change lifestyle behaviours. The messages' content was based on the Australian Heart Foundation secondary prevention guide and developed in four modules comprising key secondary prevention areas: general cardiovascular health, smoking, physical activity and diet. The text-messages in the diet module aimed to provide general healthy eating tips and motivate patients to eat more fruits and vegetables, increase fish intake, decrease unhealthy		
	Procedures used			

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.	
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)	
		fat use and decrease the levels of salt consumption in their diet. The messages were semi-tailored, for example vegetarians would not receive messages on meat and non-smokers information on smoking.
	Provider	
	Digital platform	
	Location	
	Duration	6 months
	Intensity	Four text-messages per week, including at least one message per week focussing on diet, for six months in addition to standard care.
	Tailoring/adaptation	Text-messages were semi-personalised.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6 months	
Data collection	Fruit and vegetable consumption was reported as previous 7 days. The secondary outcomes were systolic blood pressure, BMI, total cholesterol level, waist circumference, heart rate, total physical activity, smoking status, and the proportion achieving guideline levels of modifiable risk factors.	
Critical outcomes measures and effect size	**Table 2. Primary and Secondary End Point Analyses at 6 Months Follow-up[a]**	

	Intervention (n=352)	Control (n=358)	Mean difference (95% CI), p value[b]
Serves of vegetables/wk, n (%) ≥35 25-34 15-24 <15	 38 (11) 49 (15) 132 (39) 119 (35)	 10 (3) 21 (6) 99 (28) 221 (63)	 3.95 (2.00–7.79)[b], <.001 2.42 (1.49–3.95)[b] <.001 1.38 (1.12–1.71)[b], .003 0.56 (0.47–0.66)[b], <.001
Serves of vegetables/wk, mean (95% CI)	19 (18–20)	13 (12–14)	5.94 (4.61–7.26), <.001
Serves of fruits/wk, n (%) ≥14 10-13 6-9	 165 (49) 35 (10) 65 (19)	 85 (24) 19 (5) 110 (31)	 2.02 (1.63–2.50)[b], <.001 1.91 (1.12, 3.28)[b], .015

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)

<6	73 (22)	137 (39)	0.61 (0.47, 0.80)[b], <.001 0.55 (0.43, 0.70)[b], <.001
Serves of fruits/wk, n (%)	12 (11–12.5)	8 (7–9)	3.80 (2.78–4.83), <.001
≤ 1 takeaway meals per week, n (%)	236 (70)	194 (55)	1.21 (1.09–1.34)[b], <.001
Takeaway meals/wk, mean (95% CI)	1.4 (1.2–1.6)	2.2 (1.9–2.5)	−0.87 (−1.22, − 0.51), <.001
Salt intake control[a]	282 (83)	211 (60)	1.39 (1.26–1.52), <.001

[a] Analysis of covariance including randomized groups (intervention and control) and baseline value for continuous measures. The proportion of inactive patients between groups has been compared using a log-binomial regression including randomized groups (intervention and control) and corresponding baseline total physical activity MET values as fixed effect. Similarly, the proportions of current smokers have been compared between groups using a log-binomial regression including randomized groups (intervention and control) as fixed effect and the number of cigarettes per day at baseline as an adjustment variable.
[b] p value for intervention vs control.
[c] Reported as relative risk (95% CI).

Table 2. Sub-group analysis of the impact of the TEXT ME intervention on adherence to ≥ 4 dietary guideline recommendation items at six months

	N (I/C)	I	C	RR (95% CI)	p value
Age					0.400
>60 years	147/144	139 (94.6%)	114 (79.2%)	1.19 (1.09–1.31)	
≤60 years	191/207	175 (91.6%)	150 (72.5%)	1.26 (1.15–1.39)	
Sex					0.850
Female	62/60	57 (91.9%)	44 (73.3%)	1.23 (1.15–1.32)	
Male	276/291	257 (93.1%)	220 (75.6%)	1.25 (1.06–1.49)	
Education					0.378
>13 years	59/81	57 (96.6%)	60 (74.1%)	1.30 (1.14–1.50)	
≤ 13 years	278/267	256 (92.1%)	202 (75.7%)	1.22 (1.13–1.31)	
BMI					0.305
≥25 kg/m^2	264/278	246 (93.2%)	206 (74.1%)	1.26 (1.16–1.36)	
<25 kg/m^2	74/73	68 (91.9%)	58 (79.5%)	1.16 (1.01–1.32)	
Smoking					0.089

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.					
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)					
	Yes No	177/190 161/161	157 (88.7%) 157 (97.5%)	138 (72.6%) 126 (78.3%)	1.16 (1.06–1.26) 1.29 (1.17–1.43)	
	I: intervention; C: control; RR: risk ratio					
Important outcomes measures and effect size						
Statistical Analysis	The primary analysis used analysis of covariance (ANCOVA) with baseline values of the analysed parameters used as covariates where appropriate. The analyses were otherwise unadjusted. Thus, for example, the plasma LDL-C level at month 6was analysed using ANCOVA with the baseline value of LDL-C as the covariate. The above method was also used for continuous secondary outcomes. With respect to management of combined risk factors, the proportion of patients achieving at least 4 of the 5 target risk factors was analysed in terms of relative risk at month 6 and compared between groups using a log-binomial regression. Summaries of continuous baseline variables are presented as means and standard deviations unless skewed and then presented as medians and interquartile ranges. Categorical variables are presented as frequencies and percentages. Prespecified subgroup analyses were conducted if there was evidence of a significant (P < .05) treatment effect for LDL-C level, systolic blood pressure, and BMI by age, sex, education, smoking status, LDL-C tertiles, and acute coronary syndrome vs stable CHD. Analyses were conducted using SAS version 9.3 (SAS Institute Inc). All statistical tests were 2-tailed, and a 5% significance threshold was maintained.					
Risk of bias (ROB) Overall ROB	Outcome	Judgement (low/high/some concerns)	Comments			
	Risk of bias arising from the randomisation process	Low risk	Random allocation using computer generated randomisation.			
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants aware of intervention but unclear if they knew they were the intervention group of a trial. However, this is unlikely to bias results. ITT analyses.			
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	None identified.			

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.		
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)		
	Missing outcome data	Low risk	Approximately 95% of participants reported data at 6-month follow up
	Risk of bias in measurement of the outcome	Low risk	Participants were asked not to disclose their assignment to researchers. Measurement of outcome same between groups.
	Risk of bias in selection of the reported result	Low risk	No deviations from registered protocol. Some results are reported as RRs and MDs, but it does not bias result.
	Other sources of bias	Low risk	
	Overall Risk of Bias	Low	
Source of funding	The TEXT ME study was supported by a National Heart Foundation of Australia (NHFA) Grant-in-Aid (G10S5110) and a BUPA Foundation grant. The funding organisations that supported this work (through peer-reviewed, educational research grants) had no role in study conception, data collection, analysis and interpretation, and writing of the manuscript. The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: KS was funded by a University of Sydney International Postgraduate Research Scholarship. KH was funded by a University of Sydney Australian Postgraduate Award Scholarship. JC is a chief investigator on a National Health and Medical Research Council (NHMRC) programme grant (ID1052555). JR is funded by a Career Development and Future Leader Fellowship co-funded by the NHMRC and the NHFA (APP1061793). CKC is funded by a Career Development Fellowship co-funded by NHMRC and NHFA (APP1105447).		
Comments			
Additional references	Chow CK, Redfern J, Hillis GS, et al. Effect of Lifestyle-Focused Text Messaging on Risk Factor Modification in Patients With Coronary Heart Disease: A Randomized Clinical Trial. The Journal of the American Medical Association. 2015;314(12):1255–1263.		
Behaviour change techniques (16 theoretical clusters)	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning	x	

Bibliographic reference/s	S Karla; Hyun K; de Keizer L; Thiagalingam A; Hillis GS; Chalmers J; Redfern J; Chow CK. (2018) The effects of a lifestyle-focused text-messaging intervention on adherence to dietary guideline recommendations in patients with coronary heart disease: an analysis of the TEXT ME study. The International Journal of Behavioral Nutrition and Physical Activity. May 23;15(1):45.	
Study name	The Tobacco, Exercise and Diet Messages (TEXT ME)	
	Social support	
	Self-belief	x
	Comparison of outcomes	
	Identity	
	Shaping knowledge	x
	Regulation	
	Comparison of behaviour	
	Scheduled consequences	

Simons et al 2015

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents
Registration	Dutch Trial Register NTR3228
Study type	RCT, adolescents (12-17years)
Study dates	The participants started in three waves for which baseline measurements were collected in January/February 2012, March 2012, and June 2012. The participants completed online questionnaires at baseline and at one, four and ten months of follow-up.
Objective	To evaluate the effects of and adherence to an active video game promotion intervention on anthropometrics, sedentary screen time and consumption of sugar-sweetened beverages and snacks among non-active video gaming adolescents who primarily were of healthy weight.
Country/ Setting	Recruitment of the adolescents occurred in four cities in the Netherlands; i.e., Amsterdam, Amersfoort, Leiden and Breda.
Number of participants / clusters	270 adolescents were randomly allocated (140 to the intervention group and 130 to the control group)
Attrition	In total, 270 adolescents completed the anthropometric baseline measures and were randomly allocated to the intervention or control group. Of these 270 randomized adolescents, 260 participated in at least one of the anthropometric follow-up measurements and were included in the main analyses of the primary outcomes (anthropometrics). Two hundred sixty-two adolescents completed the baseline and at least one follow-up questionnaire and were included in the main analyses based on the questionnaire

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**		
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents		
Participant /community characteristics.		Intervention (n=134)	Control (n=126)
	Age, mean (SD)	13.7 (1.3)	14.1 (1.3)
	Sex, % boys	90	92
	BMI	20.6 (3.7)	20.3 (3.0)
Method of allocation	We assigned 270 gaming (i.e. <2 hours/week non-active video game time) adolescents randomly to an intervention group (n = 140) (receiving active video games and encouragement to play) or a waiting-list control group (n = 130). The adolescents were randomly assigned to the intervention group or control group after baseline assessment by the researcher or a research assistant using a pre-determined computer-generated block randomization list with blocks of 100. It was not possible to keep the participants blinded to the treatment allocation because the intervention group received an active video game upgrade package, and the control group did not		
Inclusion criteria	• The adolescent played _ 2 hours of non-active video games per week. • The adolescent played active video games less than once per week. • The adolescent was physically and mentally able to play active video games (based on self-report). • The adolescent had access to a PlayStation 3 at home. • The family did not have a Move upgrade for the PlayStation 3. • The adolescent lived in the same home as the participating family members at least 4 days per week (to enable sufficient access to the Move video games provided as part of the intervention, see below). • • At least one other family member (parent or sibling aged 8–18 years old) was willing to participate in the study (i.e., complete the questionnaires).		
Exclusion criteria	None reported		
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	PlayStation Move upgrade package was the intervention. Adolescents in the control group were asked to continue their normal gaming behaviour without the upgrade. They received PlayStation Move starter packs at the end of the study as an incentive for their participation.	
	Rationale/theory/Goal	To increase active gaming	

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**	
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents	
	Materials used	PlayStation & PlayStation move upgrade package. The PlayStation Move uses a handheld motion controller wand, a motion-capture PlayStation Eye camera that tracks the player's position and inertial sensors in the wand that detect its motion. Thus, every movement of the player is mimicked on-screen in the game. The following active video games were provided during the intervention: Sport Champions, Move Fitness, Start the Party and Medieval Moves, Dance Star Party and Sorcery. A detailed description of these Move video games can be found at: http://nl.playstation.com/ps3/games/.
	Procedures used	The participants in the intervention group received four active Move video games with different game genres (Sport Champions, Move Fitness, Start the Party and Medieval Moves) at the beginning of the study and two additional video games (Dance Star Party and Sorcery) after four months.
	Provider	
	Digital platform	PlayStation
	Location	At home play
	Duration	10 months intervention duration and follow up
	Intensity	Adolescents in the intervention group were asked to provide daily reports on their use of the Move video games over the entire ten-month period on a calendar
	Tailoring/adaptation	Two additional controllers were provided to promote playing together with family and friends; and at each contact moment it was explicitly asked and encouraged that participants substitute non-active gaming with active gaming as much as possible and for at least one hour per week. One hour per week corresponds to approximately 70 kcal (which is equivalent to the energy imbalance that can result in unnecessary weight gain) [31] and was regarded as a feasible change

<table>
<tr><td>Bibliographic reference/s</td><td colspan="7">Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023</td></tr>
<tr><td>Study name</td><td colspan="7">Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents</td></tr>
<tr><td rowspan="3"></td><td colspan="4">Planned treatment fidelity</td><td colspan="3"></td></tr>
<tr><td colspan="4">Actual treatment fidelity</td><td colspan="3">Comments on adherence etc</td></tr>
<tr><td colspan="4">Other details</td><td colspan="3">N/A</td></tr>
<tr><td>Follow up</td><td colspan="7">Measurements of the primary outcomes were collected at baseline and after four and ten months.</td></tr>
<tr><td>Data collection</td><td colspan="7">Standardized measurement used to measure body weight, height, waist and hip circumferences and skinfold thickness (in the triceps, biceps, subscapular, and suprailiac regions) at T0, T4m, and T10m. PA assessed using the validated (correlation with CSA: r = 0.48–0.78) Flemish Physical Activity Computerized Questionnaire (FPACQ). To assess sedentary screen time, questions about computer time and TV time from the FPACQ were used. Consumption of sugar-sweetened beverages was assessed based on the methods of Van der Horst et al., which involve questions about the frequency and amount (numbers of glasses, cans and bottles) of carbonated and non-carbonated soft drinks, lemonade, and sports and energy drinks consumed on a typical day. Diet sodas and juices were not assessed. The total consumptions of sugar-sweetened beverages are expressed in ml per week.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="7">Results of intention to treat multilevel regression analysis (β (95% CI)) to evaluate the effects of the active video game intervention on video game behaviour, sedentary screen time, physical activity and energy intake after 1, 4 and 10 months:
<table>
<tr><th></th><th>N</th><th>Intervention</th><th>N</th><th>Control</th><th>Model 1</th><th>Model 2</th></tr>
<tr><td>Total sedentary screen time (hrs/wk)</td><td></td><td>Median (IQR)</td><td></td><td>Median (IQR)</td><td>Exp (β) (95%CI) e</td><td>Exp (β) (95%CI) e</td></tr>
<tr><td>Baseline</td><td>138</td><td>39.25 (28.0)</td><td>122</td><td>36.33 (20.98)</td><td></td><td></td></tr>
<tr><td>1-month</td><td>130</td><td>31.5 (25.35)</td><td>110</td><td>38.71 (23.58)</td><td>0.78 (0.70;0.86)</td><td>0.82 (0.73;0.91)</td></tr>
<tr><td>4-months</td><td>129</td><td>29.0 (19.88)</td><td>119</td><td>35.0 (23.22)</td><td>0.82 (0.74;0.90)</td><td>0.78 (0.69;0.87)</td></tr>
<tr><td>10-months</td><td>131</td><td>30.5 (22.0)</td><td>121</td><td>34.83 (23.70)</td><td>0.79 (0.72;0.88)</td><td>0.82 (0.74;0.92)</td></tr>
<tr><td>Physical activity d (hrs/wk)</td><td></td><td>Median (IQR)</td><td></td><td>Median (IQR)</td><td>β (95%CI)</td><td>β (95%CI)</td></tr>
<tr><td>Baseline</td><td>138</td><td>10.63 (7.02)</td><td>124</td><td>10.38 (6.42)</td><td></td><td></td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**						
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents						
	1-month	131	10.17 (6.17)	111	10.36 (6.33)	-0.24 (-1.34;0.86)	-0.40 (-1.53;0.73)
	4-months	130	10.25 (5.92)	119	10.25 (6.33)	-0.05 (-1.15;1.04)	-0.56 (-1.72;0.59)
	10-months	131	10.0 (6.17)	121	10.0 (6.96)	-0.08 (-1.17;1.01)	-0.37 (-1.5;0.77)
	Consumption of sugar sweetened beverages (>1400 ml per week)		**% >1400 ml/week**		**%>1400ml/week**	**OR (95%CI)**	**OR (95%CI)**
	Baseline	138	73	124	76		
	1-month	131	61	111	78	0.50 (0.25;0.98)	0.49 (0.24;1.01)
	4-months	130	60	119	71	0.69 (0.36;1.33)	0.74 (0.38;1.47)
	10-months	131	62	121	77	0.67 (0.34;1.29)	0.71 (0.36;1.41)
Important outcomes measures and effect size. (time points)	**Results of main multilevel regression analyses (β (95% CI)) to evaluate the effects of the active game intervention on anthropometrics after 4 and 10 months:**						
		N	**Intervention, M (SD)**	**N**	**Control, M (SD)**	**Model 1***	**Model 2****
	BMI-SDS						
	Baseline	134	0.48 (1.2)	126	0.35 (1.1)		
	4 months	123	0.51 (1.2)	120	0.33 (1.0)	0.044 (-0.035; 0.123)	0.049 (-0.031;0.128)
	10 months	131	0.49 (1.1)	126	0.28 (1.0)	0.093 (0.015; 0.17)	0.098 (0.0199;0.176)

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**		
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents		
	BMI-SDS – SD of BMI *Adjusted for baseline outcome value, **Adjusted for baseline outcome value, age, sex, ethnicity and education level		
	Process evaluation outcome measures at 1 month, 4 months and 10 months:		
	How much time did you spend on average playing the Move video games? (% (n))	**1 month**	**4 months**	**10 months**
	0–60 minutes per week	42 (54)	60 (79)	67 (87)
	>60 minutes per week	58 (74)	40 (51)	33 (44)
	Did you succeed in playing the move video games for at least one hour per week?			
	Yes, I played the move games for at least one hour per week	61 (79)	33 (43)	28 (37)
	No, in some weeks I failed to play the move games for at least one hour	37 (48)	58 (77)	55 (73)
	No, I never succeed in playing the move games for at least one hour per week	2 (3)	9 (12)	17 (22)
Statistical Analysis	First, descriptive analyses were performed, and the data were examined for normal distributions. Medians and interquartile ranges of variables that were not normally distributed and the means and standard deviations of variable that were normally distributed were reported. Total sedentary screen time was log transformed due to the non-normal distribution of this variable. For the continuous outcomes (i.e., BMI-SDS, waist circumference-SDS, hip circumference, skin fold thickness, non-active video game time, total sedentary screen time, physical activity and consumption of snacks), we used linear mixed models, whereas for the dichotomous outcomes (i.e., active video game time and consumption of sugar-sweetened beverages), we used logistic mixed models.		
Risk of bias (ROB) Overall ROB	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low	Randomisation present, computer generated. No obvious differences between the intervention and control participants at baseline.
	Risk of bias due to deviations from intended interventions (assignment)	Some concerns	Not possible to keep the

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**		
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents		
			participants blinded to the treatment allocation because the intervention group received an active video game upgrade package, and the control group did. The participants and research assistants were blinded to group assignment at T0 but were not blinded atT4m and T10m.
	Risk of bias due to deviations from intended interventions (adherence)	Low	None reported
	Missing outcome data	Low	262 adolescents completed the baseline and at least one follow-up questionnaire and were included in the main analyses based on the questionnaire.
	Risk of bias in measurement of the outcome	Some concerns	The data analyses were not conducted in a blinded manner. Non blinding may have caused some bias in subjective outcomes.
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	

Bibliographic reference/s	**Simons M, Brug J, Chinapaw MJM, De Boer M, Seidell J, De Vet, E (2015) Replacing non-active video gaming by active video gaming to prevent excessive weight gain in adolescents. PLoS ONE 10(7), 126023**	
Study name	Replacing Non-Active Video Gaming by Active Video Gaming to Prevent Excessive Weight Gain in Adolescents	
Source of funding		
Comments	N/A	
Additional references	Any other publications which have contributed evidence to this data extraction for the study	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	
	Social support	X
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Slootmaker et al 2010

Bibliographic reference/s	**Slootmaker SM, Chinapaw MJM, Seidell JC, van Mechelen W, and Schuit AJ (2010) Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention. Preventive medicine 51(1), 31-6**			
Study name	Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention			
Registration	[ISRCTN93896459]			
Study type	RCT			
Study dates				
Objective	The objective of the present study was (1) to evaluate the feasibility of providing an activity monitor coupled to online individualised PA advice; and (2) to study the effectiveness of this intervention on the daily PA and its determinants, aerobic fitness and anthropometrics of relatively inactive adolescents in a randomised controlled trial (RCT).			
Country/ Setting	A randomised controlled trial, including five secondary schools (n=87). In the 3-month intervention (Amsterdam, The Netherlands, 2005) adolescents were provided with a PAM accelerometer, coupled to a web-based tailored PA advice (PAM COACH). Measurements (i.e., PA, determinants of PA, aerobic fitness and anthropometrics) took place at baseline and at 3- and 8-month follow-up.			
Number of participants / clusters	87 adolescents 13-17 years, with different educational levels from 5 secondary schools.			
Attrition	To be able to detect a between-group difference of 20% in PA level (80% probability and a significance level of 0.05), two groups of 50 participants were required. Of the 145 invited, 87 subjects (60%) completed the baseline measurements and were then randomly assigned to either the intervention (n=41) or the control group (n=46).			
	Baseline characteristics (mean (SD) or %) of PAM and control group for boys and girls:			
Participant /community characteristics.		**Boys (n=32, 37%)**		**Girls (n=55, 63%)**
		PAM (n=15)	**Control (n=17)**	**PAM (n=26)**	**Control (n=29)**
	Age (years)	15.3 (1.1)	14.8 (1.4)	15.4 (1.1)	15.0 (1.2)
	High education (%)	87	*59*	54	55
	Familiar with PA recommendation (%)	27	24	31	35
	Compliance with PA recommendation (%)	93	86	65	58
Method of allocation	A convenience sample of apparently healthy adolescents (aged 13–17 years), with differential educational level was recruited from five secondary schools in Amsterdam, The Netherlands. First, PA levels were monitored for 2 weeks by means of a PA monitor and a PA questionnaire. Based on these 2 weeks, the study population (n=286) was divided in an 'active' (most active 50% of the population) and 'inactive' (least active 50%) group. The relatively inactive adolescents were invited to participate in the RCT. Randomisation was performed at individual level using sealed envelopes after the baseline measurements.			
Inclusion criteria	Inclusion criterion was ability to walk without aid.			

Bibliographic reference/s	**Slootmaker SM, Chinapaw MJM, Seidell JC, van Mechelen W, and Schuit AJ (2010) Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention. Preventive medicine 51(1), 31-6**	
Study name	Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention	
Exclusion criteria	Not reported	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	The PAM-concept (PAM B.V., Doorwerth, The Netherlands) combines objectively measured PA by an accelerometer with a webbased tailored PA advice (PAM COACH).
	Rationale/theory/Goal	The PAM is worn on the hip and produces a cumulative activity score, i.e. PAM score. The PAM score is a proxy measure of total daily PA. Via a docking station connected to the computer, the user can upload his PAM scores to the PAM COACH website any time of the day. The PAM COACH provides the user with short individualised PA feedback based on his current PAM score and additionally provides personally adapted suggestions to promote daily PA.
	Materials used	Computer tailored programme, accelerometer.
	Procedures used	Control: The control group received a single written information brochure with brief general PA recommendations. The intervention group received the PAM and was given access to a web-based tailored PA advice for a 3-month period. Intervention: After registration on the PAM COACH the user first answers 12 questions regarding perceived PA barriers. Then the user uploads the PAM score and formulates an activity goal based on this PAM score. If the user does not formulate a goal, a standard goal is set (i.e. PAM score of 40). On every subsequent login, the PAM COACH presents the uploaded PAM scores and goals in orderly graphs.
	Provider	School computers

Bibliographic reference/s	**Slootmaker SM, Chinapaw MJM, Seidell JC, van Mechelen W, and Schuit AJ (2010) Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention. Preventive medicine 51(1), 31-6**	
Study name	Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention	
	Digital platform	The participants received written and verbal instructions and practical demonstrations on how to wear the PAM and how to use the PAM COACH.
	Location	School
	Duration	Intervention group were given access to the web-based tailored PA advice for 3 months.
	Intensity	Participants were instructed to register and upload PAM data in the first week of the intervention, to check if the system worked properly. After that, the participant was allowed to use the PAM and PAM COACH as much as wanted. At all schools at least one computer with PAM software and access to the Internet was available
	Tailoring/adaptation	The uploaded PAM scores are automatically accompanied by a tailored PA advice on the computer screen as well as motivational tips (n=21) for increasing PA. The advice includes information on how to reach the PAM goal, which is based on 1) user preferred activities e.g. daily an extra 60 min walking, or 20 min playing squash; and 2) user perceived PA barriers. In addition to the short feedback from the PAM COACH, the users can easily monitor their daily PA score on the display of the PAM.
	Planned treatment fidelity	
	Actual treatment fidelity	
	Other details	
Follow up	3 and 8 months (only 8-month data extracted as per the protocol)	
Data collection	All measurements took place during school hours at the school at baseline and after 3-month intervention. To evaluate possible long-term effects the questionnaire was administered again 5 months after the end of the intervention. PA: The Activity Questionnaire for Adolescents & Adults (AQuAA) is based on the SQUASH-questionnaire (Wendel-Vos et al., 2003). The AQuAA recalls PA in the past week of light (2–5 metabolic equivalents, MET), moderate (5–8 MET) and	

<table>
<tr><td>Bibliographic reference/s</td><td>Slootmaker SM, Chinapaw MJM, Seidell JC, van Mechelen W, and Schuit AJ (2010) Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention. Preventive medicine 51(1), 31-6</td></tr>
<tr><td>Study name</td><td>Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention</td></tr>
<tr><td></td><td>vigorous (N8 MET) intensity, as well as time spent sedentary (all activities b2 MET), such as TV viewing and computer use. Activities were divided in five categories 1) transport to school; 2) PAs at school; 3) household chores; 4) leisure time activities, and 5) active sports.

Anthropometrics: Standard procedures were used to measure body weight, body height, waist and hip circumference, and thickness of four skin
folds (biceps, triceps, sub-scapular and supra-iliac). Intra-rater reliability and inter-rater reliability (ICC) varied between 0.83 and 0.98. Body weight was measured in light clothing without shoes. Body mass index was calculated by dividing the weight (kilograms) by height squared (meters). (not extracted as no follow up data from at least 6 months).</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Median physical activity (PA) scores and mean difference in PA and sedentary time (min week^{-1}) at baseline and at 3- and 8-month follow-up between PAM intervention and
control group:
<table>
<tr><td>Outcome measure (min week^{-1})</td><td colspan="3">Boys</td><td colspan="3">Girls</td></tr>
<tr><td></td><td>PAM (median, IQR)</td><td>Control (median, IQR)</td><td>Difference between groups β (95% CI)</td><td>PAM (median, IQR)</td><td>Control (median, IQR)</td><td>Difference between groups β (95% CI)</td></tr>
<tr><td colspan="7">Sedentary time</td></tr>
<tr><td>Baseline</td><td>4332 (2360; 4950)</td><td>2640 (1450; 4151)</td><td>-</td><td>2692 (1976; 4580)</td><td>3285 (2278; 3960)</td><td></td></tr>
<tr><td>8 months</td><td>2915 (1879; 3881)</td><td>3175 (1691; 5494)</td><td>−1801 (−3545; −57)</td><td>2825 (1950; 4917)</td><td>3200 (2460; 3935)</td><td>86 (−674; 846)</td></tr>
<tr><td colspan="7">Light intensity PA</td></tr>
<tr><td>Baseline</td><td>1375 (925; 2340)</td><td>565 (401; 900)</td><td></td><td>985 (598; 1566)</td><td>1470 (718; 2352)</td><td></td></tr>
<tr><td>8 months</td><td>968 (646; 1313)</td><td>618 (310; 2069)</td><td>−379 (−1184; 424)</td><td>453 (206; 1238)</td><td>960 (540; 1140)</td><td>253 (−362; 869)</td></tr>
<tr><td colspan="7">Moderate to vigorous intensity PA</td></tr>
<tr><td>Baseline</td><td>1380 (720; 1650)</td><td>1120 (553; 1993)</td><td></td><td>740 (281; 1414)</td><td>450 (150; 1003)</td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Slootmaker SM, Chinapaw MJM, Seidell JC, van Mechelen W, and Schuit AJ (2010) Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention. Preventive medicine 51(1), 31-6</td></tr>
<tr><td>Study name</td><td colspan="3">Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention</td></tr>
<tr><td></td><td colspan="3"><table>
<tr><td>8 months</td><td>825 (485; 1065)</td><td>840 (546; 1334)</td><td>−156 (−509; 197)</td><td>525 (297; 960)</td><td>600 (205; 930)</td><td>−46 (−319; 226)</td></tr>
</table>
Notes: Difference between groups was adjusted for age and baseline value of outcome measure. Abbreviations: β: regression coefficient; IQR: inter-quartile range between 25th and 75th quartile; 95% CI: 95% confidence interval; PA: physical activity.</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="3">N/A</td></tr>
<tr><td>Statistical Analysis</td><td colspan="3">Non-parametric testing (Mann- Whitney U-test) was used for PA data. Independent samples t-test was used to analyse all other demographic variables, determinants of PA, aerobic fitness and anthropometrics. The effect of the intervention was estimated based on the intention-to treat principle including all participants who had attended at least one follow-up measurement.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>Outcome</td><td>Judgement (Low / High / some concerns)</td><td>Comments</td></tr>
<tr><td></td><td>Risk of bias arising from the randomisation process</td><td>Some concerns</td><td>Randomisation present. No information on concealment. Some differences in baseline variables and logon rate between the groups.</td></tr>
<tr><td></td><td>Risk of bias due to deviations from intended interventions (assignment)</td><td>Some concerns</td><td>No information on blinding or deviations from intended interventions</td></tr>
<tr><td></td><td>Risk of bias due to deviations from intended interventions (adherence)</td><td>Low</td><td>High retention rates throughout the intervention period.</td></tr>
<tr><td></td><td>Missing outcome data</td><td>Some concerns</td><td>The study suffered from insufficient power due to</td></tr>
</table>

Bibliographic reference/s	**Slootmaker SM, Chinapaw MJM, Seidell JC, van Mechelen W, and Schuit AJ (2010) Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention. Preventive medicine 51(1), 31-6**		
Study name	Accelerometers and Internet for physical activity promotion in youth? Feasibility and effectiveness of a minimal intervention		
			participants withdrawing at different points in the study
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no information on blinding).
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns.	
	Other outcome details:	N/A	
Source of funding	Not reported		
Comments	N/A		
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring	X	
	Goals and planning	X	
	Social support		
	Self-belief		
	Comparison of outcomes		
	Identity		
	Shaping knowledge		
	Regulation		
	Comparison of behaviour		

Smith et al 2016

Bibliographic reference/s	**Smith K, Lanningham-FL, Welch A, and Campbell C (2016) Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women. Journal of physical activity & health 13(6), 587-93**			
Study name	Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women			
Registration	(ISRCTN38498311)			
Study type	RCT			
Study dates	January and September 2013.			
Objective	This study's objective was to determine if a web-based behavioural intervention (BI) can prevent excessive gestational weight gain (GWG) by increasing physical activity (PA).			
Country/ Setting	USA, large hospital network within a metropolitan area			
Number of participants / clusters	51 women 10 to 14 weeks pregnant were recruited and enrolled into a RCT between January and September 2013. 25 were allocated to usual care and 26 were allocated to the intervention. 21 in the usual care group were analysed and 24 in the intervention were analysed after loss to follow up.			
Attrition	The sample size of at least 50 participants was based on GWG data from our previous observational studies with similar inclusion criteria. This sample size allowed for a conservative attrition rate of 20% to yield an adequate sample (n = 20) in both groups with 80% power to detect a difference between groups in total GWG of 4.0 kg.			
Participant /community characteristics.		**Usual care n=45**	**Intervention n =24**	**P value**
	Age, mean (SD)	29.4 ± 4.9	29.7 ± 4.1	.82
	Prepregnancy BMI (kg/m^2)	25.4 ± 4.5	27.3 ± 4.6	.18
	Number of pregnancies (including current)	2.5 ± 1.1	2.5 ± 1.6	.97
	Parity	1.2 ± 1.0	1.2 ± 1.2	.94
Method of allocation	Participants were randomized (using computerized random numbers) to usual care (UC) or a BI following the completion of baseline anthropometric, PA, and dietary intake data collection between 10 to 14 weeks gestation. Participants and research staff were blinded to the randomization assignment until the baseline data collection was completed. Due to the nature of the study design, participants were not blinded once they were informed of their randomization.			
Inclusion criteria	Only women with a history of participating in fewer than 3 sessions of exercise for 30 minutes or more per week for at least 6 months before conception were enrolled. Additional inclusion criteria included being 18 to 45 years old, speaking English, having regular Internet access, and being willing to walk 30 minutes on most days of the week if asked to do so.			
Exclusion criteria	Exclusion criteria included having a history of gestational diabetes mellitus, preeclampsia, or chronic disease (e.g. Type 1 diabetes mellitus, heart disease,			

Bibliographic reference/s	**Smith K, Lanningham-FL, Welch A, and Campbell C (2016) Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women. Journal of physical activity & health 13(6), 587-93**	
Study name	Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women	
	renal disease); being underweight (body mass index [BMI] < 18.5 kg·m2); smoking during pregnancy; and having a condition or using a medication known to influence overall metabolism.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	Behavioural intervention
	Rationale/theory/Goal	To determine if a web-based behavioural intervention (BI) can prevent excessive gestational weight gain (GWG) by increasing physical activity (PA).
	Materials used	All participants were provided with an in-person tutorial with the study coordinator on how to use the website and its features, navigate pertinent information, and practice tracking PA if in the BI. A written user guide explaining the website features and how to use them was also sent home with each woman
	Procedures used	Behavioural intervention (BI) participants had access to all of the website features, including the same diet and PA recommendations as UC, as well as exercise goal-setting modules, problem-solving modules, a journal, a calendar to track all exercise until delivery, and a community forum to interact with other participants in the BI (social support).
	Provider	
	Digital platform	
	Location	
	Duration	Participants completed 3 week-long data collection periods between 10 to 14 weeks (baseline), 24 to 26 weeks, and 34 to 36 weeks of pregnancy. At each time point, participants reported to the research centre or partnering hospital and were weighed
	Intensity	BI participants were instructed to gradually work up to ≥150 minutes of moderate PA per week (in ≥10-minute bouts) by week 19 gestation and sustain at least this amount until delivery
	Tailoring/adaptation	Not reported
	Planned treatment fidelity	
	Actual treatment fidelity	Comments on adherence etc

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Smith K, Lanningham-FL, Welch A, and Campbell C (2016) Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women. Journal of physical activity & health 13(6), 587-93</td></tr>
<tr><td>Study name</td><td colspan="2">Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women</td></tr>
<tr><td></td><td>Other details</td><td>Participants receiving Usual Care could only view general prenatal diet and PA recommendations including American College of Obstetricians and Gynaecologists guidelines and benefits of PA during pregnancy. Gestational age was calculated by ultrasound if completed by time of enrolment or by date of last normal menstrual period.</td></tr>
<tr><td>Follow up</td><td colspan="2"></td></tr>
<tr><td>Data collection</td><td colspan="2">Appropriate GWG was defined as the 2009 Institute of Medicine (IOM) total and weekly weight-gain recommendations based on pre-pregnancy BMI.6 Total GWG was defined as the last weight measured by the research staff between 34 to 36 weeks gestation minus pre-pregnancy weight. Rates of GWG were calculated at each time point by subtracting pre-pregnancy weight from the measured weight at each data collection period, using the previously reported methodology. Appropriate GWG was defined as a range using the minimum and maximum values of the weekly recommended IOM weight-gain range6 and was calculated as follows: expected first trimester total GWG + ([gestational age at time of weight measurement, 13 weeks 0 days] × [weekly expected weight gain for second and third trimesters based on pre-pregnancy BMI]).17 Adequacy of GWG was then categorized as inadequate (less than recommended range), adequate (within recommended range), or excessive (more than recommended range).

PA was objectively assessed for all participants wearing the Sense- Wear Mini armband (Model MF-SW; BodyMedia, Pittsburgh, PA) for 1 week (7 consecutive 24-hour periods) at each data collection period. The following PA data were analyzed: total number of minutes spent in sedentary (≤1.5 METs) and light (1.6 to 2.9 METs) PA per week, total weekly accumulated MET-minutes, and weekly number of minutes in moderate-to-vigorous physical activity (MVPA; ≥3.0 METs) performed in at least 10-, 20-, and 30-minute bouts.

All participants completed a weighed 3-day diet record (2 weekdays and 1 weekend day) during each data collection period. Dietary records were analyzed with Nutritionist Pro (Axxya Systems, Stafford,TX). Intake data from the 3 days were averaged to provide
estimated daily intakes of total calories, carbohydrate, protein, and total fat.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">
<table>
<tr><td colspan="7">Diet and Physical Activity (PA) Data for All Participants, Presented as mean ± SD:</td></tr>
<tr><td></td><td colspan="2">Baseline Weeks 10–14</td><td colspan="2">Weeks 24–26</td><td colspan="2">Weeks 34–36</td></tr>
<tr><td></td><td>Usual care</td><td>Intervention</td><td>Usual care</td><td>Intervention</td><td>Usual care</td><td>Intervention</td></tr>
<tr><td>Kcal-day</td><td>1,934 ± 678</td><td>2,167 ± 556</td><td>1,894 ± 594</td><td>2,503 ± 703*</td><td>2,016 ± 501</td><td>2,264 ± 511</td></tr>
<tr><td>% Kcals carb</td><td>51.1 ± 8</td><td>50.9 ± 6</td><td>52.4 ± 5.8</td><td>52.2 ± 8</td><td>53 ± 7.3</td><td>51.7 ± 7.6</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Smith K, Lanningham-FL, Welch A, and Campbell C (2016) Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women. Journal of physical activity & health 13(6), 587-93**
Study name	Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women

% Kcals protein	16.5 ± 3.2	14.7 ± 2.7	16.3 ± 2.9	14.2 ± 2.5	16.1 ± 3.1	15.7 ± 3.1
% Kcals fat	34.1 ± 5.8	36.1 ± 4.7	33.3 ± 4.8	35.1 ± 7	33 ± 6.1	34.1 ± 6.1
Total MET mins/wk	12,386 ± 1,429	12,132 ± 1,254	12,180 ± 1,388	12,053 ± 1,376	11,312 ± 1,306	11,604 ± 1,435
Total sedentary PA mins/wk	5,417 ± 634	5,506 ± 720	5,421 ± 692	5,455 ± 634	5,406 ± 1,086	5,723 ± 609
Total light PA mins/wk	1,309 ± 622	1,229 ± 641	1,289 ± 683	1,196 ± 543	1,117 ± 569	1,024 ± 459
MVPA 10 min bouts min/wk	105 ± 106	112 ± 120	104 ± 88	177 ± 155	98 ± 119	151 ± 176
MVPA 20 min bouts min/wk	46 ± 67	57 ± 77	46 ± 48	122 ± 106*	51 ± 76	92 ± 119
MVPA 30 min bouts min/wk	25 ± 46	31 ± 59	14 ± 24	74 ± 70*	29 ± 47	63 ± 89
* Significantly different between treatment groups, P < .01. 10-min bouts were defined as at least 8 min of MVPA within 10 consecutive min. b 20- and 30-min bouts were defined as sustained MVPA for at least 16 and 24 min respectively, with only 2 min below the moderate intensity threshold within any 10-min period.						

Important outcomes measures and effect size. (time points)

Rates and Adequacy of Gestational Weight Gain (GWG) Across Pregnancy

	Baseline Weeks 10–14		Weeks 24–26		Weeks 34–36	
	Usual care n=21	Intervention n=24	Usual care n=21	Intervention n=22	Usual care n=21	Intervention n=22
Total GWG (kg)	1.8 ± 2.3	2 ± 2.6	7 ± 3.1	7.6 ± 4	11.2 ± 5.1	13.6 ± 5.6
% gained of total IOM recommendation	84 ± 107	88 ± 112	109 ± 57	120 ± 79	106 ± 57	138 ± 73
Inadequate (%)	23.8	12.5	14.3	9.1	14.3	4.5
Adequate (%)	42.9	54.2	38.1	40.9	33.3	27.3
Excessive (%)	33.3	33.3	47.6	50	52.4	68.2
Note. Total GWG = (current weight measured at each timepoint – self-reported pre-pregnancy weight).						

Bibliographic reference/s	**Smith K, Lanningham-FL, Welch A, and Campbell C (2016) Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women. Journal of physical activity & health 13(6), 587-93**		
Study name	Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women		
	Abbreviation: IOM recommendation, 2009 Institute of Medicine GWG recommendation		
Statistical Analysis	Data are reported as mean ± SD and group comparisons were made by independent sample t tests. All results were adjusted with a Bonferroni correction for multiple comparisons where applicable. Statistical significance was accepted at the level of P < .05. Preliminary statistical analyses were conducted by a statistician who was blinded to the randomization assignment. Statistical analyses were conducted in MedCalc Version 13.1 (MedCalc Software, Mariakerke, Belgium).		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low	Randomisation present by computer. No difference in baseline variables between the groups.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Participants and research staff were blinded to the randomization assignment until the baseline data collection was completed. Due to the nature of the study design, participants were not blinded once they were informed of their randomization.
	Risk of bias due to deviations from intended interventions (adherence)	Low	No indication of deviations from intended interventions.
	Missing outcome data	Some concerns	Some subjects lost to follow up, although numbers were low the study did not reach the required power of 50 participants.
	Risk of bias in measurement of the outcome	Low	Objective outcome measures
	Risk of bias in selection of the reported result	Low	Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	

Bibliographic reference/s	**Smith K, Lanningham-FL, Welch A, and Campbell C (2016) Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women. Journal of physical activity & health 13(6), 587-93**	
Study name	Web-Based Behavioral Intervention Increases Maternal Exercise but Does Not Prevent Excessive Gestational Weight Gain in Previously Sedentary Women	
	Other outcome details:	N/A
Source of funding	Not reported	
Comments	N/A	
Additional references	N/A	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	X
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	

Spittaels et al 2007

Bibliographic reference/s	**Spittaels Heleen, De Bourdeaudhuij , I , Brug J, and Vandelanotte C (2007) Effectiveness of an online computer-tailored physical activity intervention in a real-life setting. Health education research 22(3), 385-96**
Study name	Effectiveness of an online computer-tailored physical activity intervention in a real-life setting
Registration	Not reported
Study type	RCT, adults
Study dates	Not reported
Objective	The aim of this study was to evaluate the effectiveness of a computer-tailored physical activity intervention delivered through the Internet in a real-life setting
Country/ Setting	Six worksites in the northern part of Belgium, including four commercial settings and two local governmental institutes (n = 8000 employees).
Number of participants / clusters	562 employees randomised individually into one of the three conditions. Group 1 (n = 174) received computer tailored physical activity advice supplemented with five stage-of-change targeted reminder e-mails during the 8 weeks; Group 2 (n =

Bibliographic reference/s	**Spittaels Heleen, De Bourdeaudhuij , I , Brug J, and Vandelanotte C (2007) Effectiveness of an online computer-tailored physical activity intervention in a real-life setting. Health education research 22(3), 385-96**			
Study name	Effectiveness of an online computer-tailored physical activity intervention in a real-life setting			
	175) received tailored physical activity advice without emails; and Group 3 (n = 177) received standard advice.			
Attrition	0% drop out overall and in each group.			
Participant /community characteristics.		Tailored advice + e-mail (n = 116), mean SD	Tailored advice (n = 122), mean SD	Standard advice (n = 141), mean SD
	Men (%)	67.2	68.0	73.0
	Women (%)	38.8	32.0	27.0
	Mean Age (years)	39.7 (8.9)	39.3 (8.7)	40.9 (8.0)
	BMI (kg/m^2)	24.3 (3.0)	24.4 (3.5)	24.4 (3.1)
Method of allocation	Baseline questionnaires accompanied by an informed consent form were sent by regular mail to 570 persons who wanted to participate in the study (7% response rate). In total, 562 employees (92%) returned the baseline questionnaire with the informed consent form and were randomized.			
Inclusion criteria	Inclusion criteria were as follows: between 25 and 55 years of age, no history of cardiovascular disease and Internet access (including e-mail access) either at home or at work. Individuals who were interested and met the inclusion criteria could react by e-mail, after which more detailed information about the study was sent.			
Exclusion criteria	Not reported			
Intervention	**TIDieR Checklist criteria**		**Details**	
	Brief Name			
	Rationale/theory/Goal			
	Materials used		Computer, website.	
	Procedures used		**Tailored intervention:** consisted of 'physical activity advice' and an 'action plan'. In order to receive tailored physical activity advice, participants were required to complete a physical activity and a psychosocial determinants questionnaire. The tailored advice appeared immediately on the computer screen and contained normative physical activity feedback as well as tips and suggestions for increasing physical activity. The	

Bibliographic reference/s	**Spittaels Heleen, De Bourdeaudhuij , I , Brug J, and Vandelanotte C (2007) Effectiveness of an online computer-tailored physical activity intervention in a real-life setting. Health education research 22(3), 385-96**	
Study name	Effectiveness of an online computer-tailored physical activity intervention in a real-life setting	
		advice was tailored to participants' stage of changes, both by content and the way in which the participants were approached, and to the constructs of Theory of Planned Behaviour by giving the participants personal advice about intentions, attitudes, self-efficacy, social support, knowledge, benefits and barriers of physical activity. Participants with positive intentions to increase their level of physical activity were encouraged to make a personal 'Action Plan'. After having received their tailored advice, participants in Group 1 were further encouraged to change their behaviour by five stage-of-change targeted e-mail tip sheets during a period of 8 weeks. **Standard advice:** Participants in the non-tailored comparison group received a standard physical activity advice via the Internet. The webpage provided information about the benefits of physical activity, current public health recommendations, the difference between moderate- and vigorous-intensity activities and tips and suggestions to assist in becoming more physically active.
	Provider	
	Digital platform	Group 1 (n = 174) received computer tailored physical activity advice supplemented with 5 stage-of-change targeted reminder e-mails during the 8 weeks; Group 2 (n = 175) received tailored physical activity advice without emails; and Group 3 (n = 177) received standard advice.
	Location	Belgium
	Duration	8 weeks for group 1, no information on this for groups 2 and 3.
	Intensity	Not reported
	Tailoring/adaptation	See above 'procedures used'

Bibliographic reference/s	**Spittaels Heleen, De Bourdeaudhuij , I , Brug J, and Vandelanotte C (2007) Effectiveness of an online computer-tailored physical activity intervention in a real-life setting. Health education research 22(3), 385-96**				
Study name	Effectiveness of an online computer-tailored physical activity intervention in a real-life setting				
	Planned treatment fidelity	-			
	Actual treatment fidelity	-			
	Other details	-			
Follow up	6 months				
Data collection	To assess physical activity, the long usual week version of the International Physical Activity Questionnaire (IPAQ) was used. Each reported physical activity was expressed in min per week. A 'total moderate-intensity and vigorous-intensity physical activity' index was computed by summing all reported physical activities executed at moderate and vigorous intensity.				
Critical outcomes measures and effect size. (time points)	Mean physical activity (PA) scores (min week-1) and time spent sitting (min day-1) at baseline and at 6-month follow-up for all conditions as measure by the long usual week version of the International Physical Activity Questionnaire (IPAQ) and total group displayed as mean (SD):				
		Tailored advice + e-mail (n = 116)	**Tailored advice (n = 122)**	**Standard advice (=141)**	**Time X group (F)**
	Total PA (min week^{-1})				
	Baseline	696 (510)	640 (422)	622 (462)	0.935
	6 months	776 (540)	682 (452)	708 (514)	
	Total moderate- to vigorous-intensity PA (min week^{-1})				
	Baseline	438 (373)	362 (292)	376 (325)	0.598
	6 months	479 (376)	397 (310)	428 (374)	
	Total vigorous-intensity PA (min week^{-1})				
	Baseline	155 (200)	134 (158)	122 (174)	3.120
	6 months	161 (181)	111 (140)	128 (160)	
	Sitting on weekday (min day^{-1})				
	Baseline	482 (183)	492 (202)	470 (217)	0.228
	6 months	443 (168)	438 (172)	419 (181)	
	Sitting on weekend day (min day^{-1})				
	Baseline	308 (160)	296 (160)	309 (182)	0.143

Bibliographic reference/s	**Spittaels Heleen, De Bourdeaudhuij , I , Brug J, and Vandelanotte C (2007) Effectiveness of an online computer-tailored physical activity intervention in a real-life setting. Health education research 22(3), 385-96**				
Study name	Effectiveness of an online computer-tailored physical activity intervention in a real-life setting				
	6 months	276 (131)	268 (141)	271 (139)	
Important outcomes measures and effect size. (time points)	N/A				
Statistical Analysis	Data were analysed for those having completed pre–post test data and also using an intention-to treat analysis. As no major differences were found, only the results of the complete cases analyses are presented.				
Risk of bias (ROB) **Overall ROB**	**Outcome**		**Judgement (Low / High / some concerns)**	**Comments**	
	Risk of bias arising from the randomisation process		Low	Randomisation present by computer. There were no differences of baseline characteristics	
	Risk of bias due to deviations from intended interventions (assignment)		Some concerns	No information on blinding.	
	Risk of bias due to deviations from intended interventions (adherence)		Low	None reported	
	Missing outcome data		Low	Of the initial sample, 379 (72%) persons responded to the post-tests after 6 months and were included in the analyses: 116 (66%) in the tailored intervention + e-mail group, 122 (69%) in the tailored intervention group and 141 (79%) in the standard intervention group (total drop-out = 28.9%).	
	Risk of bias in measurement of the outcome		Low	None reported	
	Risk of bias in selection of the reported result		Some concerns	Boas may have resulted from subjects being aware of the intervention received (no blinding).	
	Overall risk of Bias		Some concerns		
	Other outcome details:		N/A		

Bibliographic reference/s	**Spittaels Heleen, De Bourdeaudhuij , I , Brug J, and Vandelanotte C (2007) Effectiveness of an online computer-tailored physical activity intervention in a real-life setting. Health education research 22(3), 385-96**	
Study name	Effectiveness of an online computer-tailored physical activity intervention in a real-life setting	
Source of funding		
Comments	No clear inclusion/exclusion criteria	
Additional references	Any other publications which have contributed evidence to this data extraction for the study	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Tanaka et al 2010

Bibliographic reference/s	**Tanaka M, Adachi Y, Adachi K, and Sato C (2010) Effects of a non-face-to-face behavioral weight-control program among Japanese overweight males: a randomized controlled trial. International journal of behavioral medicine 17(1), 17-24**
Study name	Effects of a Non-Face-to-Face Behavioral Weight-Control Program Among Japanese Overweight Males: A Randomized Controlled Trial
Registration	Not reported
Study type	RCT, adults
Study dates	Among 162 male responders to the recruitment through a local newspaper advertisement in Kyoto in January 2002, 51 participated in this research
Objective	The purpose of this study is to examine two hypotheses. The first was that first month weight loss effect is obtained by a behavioural program assisted by computer tailored advices (Kenkou-tatsujin™ [KTP]) among overweight males and maintained for 7 months; the second was that the effects in the full KTP is superior to the booklet only.

Bibliographic reference/s	**Tanaka M, Adachi Y, Adachi K, and Sato C (2010) Effects of a non-face-to-face behavioral weight-control program among Japanese overweight males: a randomized controlled trial. International journal of behavioral medicine 17(1), 17-24**		
Study name	Effects of a Non-Face-to-Face Behavioral Weight-Control Program Among Japanese Overweight Males: A Randomized Controlled Trial		
Country/ Setting	Japan		
Number of participants / clusters	Fifty-one males (body mass index [BMI]=26.2) were randomly allocated to the KTP group (KTPG) or control group (CG). The KTPG (n=23) read a booklet, set target behaviours, received advises, and self-monitored their weight and the targeted behaviours for 7 months.		
Attrition	The attrition rate at the seventh month was not different between the two groups (8.7% in KTPG and 10.7% in CG, p=1.00).		
Participant /community characteristics.		Website group (n = 23)	Control group (n = 28)
	Age, mean (SD)	45.8 (12.3)	46.1 (12.4)
	BMI (kg/m2), mean (SD)	26.1 (2.0)	26.3 (1.9)
Method of allocation			
Inclusion criteria	23 Persons aged 20–65 years, having a BMI of more than 24 kg/m2 or BMI of more than kg/m^2 with mild hypertension, hyperlipidaemia, or diabetes mellitus, and weight loss were considered to be preferable. BMI of more than 25 kg/m^2 is defined as obese by JASSO in Japan		
Exclusion criteria			
Intervention	**TIDieR Checklist criteria**	**Paper/Location**	**Details**
	Brief Name	KTP was a completely non-face-to-face commercial program	
	Rationale/theory/Goal	Briefly, the educational elements of KTP included a booklet on behavioural weight control, self-assessment of daily behaviours, target behaviour setting, and self-monitoring of daily body weight and targeted behaviours. This process was assisted twice by computer-tailored advises based on the responses to the questionnaire	
	Materials used	A weight scale and a pedometer were given to each participant.	
	Procedures used	KTP was structured to assist users to self-select target behaviours by two steps considering self-efficacy and intention. Firstly, the participants evaluated their present status of each item and answered the questions at three levels (doing, could	

Bibliographic reference/s	**Tanaka M, Adachi Y, Adachi K, and Sato C (2010) Effects of a non-face-to-face behavioral weight-control program among Japanese overweight males: a randomized controlled trial. International journal of behavioral medicine 17(1), 17-24**	
Study name	Effects of a Non-Face-to-Face Behavioral Weight-Control Program Among Japanese Overweight Males: A Randomized Controlled Trial	
		do with some efforts, or too hard to do). Secondly, they chose three to five items of both physical activity and dietary behaviour from those they evaluated "could do with some efforts" as target behaviours to be improved. **The KTP booklet:** The booklet (8.8×26.3 cm) consisted of 22 pages with 12 modules, and educational contents were based on the knowledge for behavioural weight control, the reason why changes in dietary and physical activity are necessary, specific examples to improve one's daily behaviours, how to target setting and self-monitoring, the risk of inappropriate food restriction, the coping to emotional hunger, stress management, and health risks of obesity.
	Provider	In this study, careful attention was paid to provide no advice or information except computer-tailored advices at any time including the follow-up measurement sessions.
	Digital platform	Website, internet
	Location	-
	Duration	KTPG received KTP for 1 month and continued to monitor their body weight, walking steps, and targeted behaviours every day for 7 months. Their body weight was recorded on a graph and targeted behaviours were evaluated by three "good (○), fair (Δ), poor (×)". On the other hand, CG read the KT booklet and tried to reduce weight by themselves. CG was also instructed to record their body weight and walking steps for 7 days before each of measurement dates.
	Intensity	See above
	Tailoring/adaptation	See above
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	7 months	

<table>
<tr><td>Bibliographic reference/s</td><td>Tanaka M, Adachi Y, Adachi K, and Sato C (2010) Effects of a non-face-to-face behavioral weight-control program among Japanese overweight males: a randomized controlled trial. International journal of behavioral medicine 17(1), 17-24</td></tr>
<tr><td>Study name</td><td>Effects of a Non-Face-to-Face Behavioral Weight-Control Program Among Japanese Overweight Males: A Randomized Controlled Trial</td></tr>
<tr><td>Data collection</td><td>Health check-up of body measurement and blood sampling were conducted by the staffs of the Association for Preventive Medicine of Japan. Body weight was measured using a digital scale (model BWB-800, TANITA) by a staff while the participants were wearing light clothing and no shoes at baseline and the first, third, and seventh months. Physical activity and dietary behaviour were measured using an original 13-item brief behavioural questionnaire at baseline and the first, third, and seventh months.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Change in weight, BMI, and percent weight loss at the first, third, and seventh months, mean (SD):

<table>
<tr><th></th><th>KTPG (n=23)</th><th>CG (booklet) (n=28)</th><th>Group×time interaction by 7months</th></tr>
<tr><td colspan="4">Body weight (kg)</td></tr>
<tr><td>Month 7</td><td>−2.4 (3.2)</td><td>−1.6 (2.8)</td><td>F 1.206 P 0.310</td></tr>
<tr><td colspan="4">BMI (kg/m2)</td></tr>
<tr><td>Month 7</td><td>−0.9 (1.1)</td><td>−0.6 (1.0)</td><td>F 1.231 P 0.300</td></tr>
<tr><td colspan="4">Percent weight loss</td></tr>
<tr><td>Month 7</td><td>−3.1 (3.8)</td><td>−2.2 (3.8)</td><td>F 0.952 P 0.417</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>
Proportion of the participants who lost at least 5% of the initial body weight at the seventh month in KTPG was larger than that in CG, but the difference was not statistically significant (KTPG= 26.1%, CG=14.3%, p=0.32).</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>N/A</td></tr>
<tr><td>Statistical Analysis</td><td>All statistical analyses were performed using the SPSS software version 12.0 (SPSS, Chicago, IL, USA) based on an intent-to-treat principle using all randomized participants
and assuming no changes from baseline for those with missing date</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>
<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low</td><td>Randomisation present. No information on concealment. Baseline characteristics did not differ between the</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Tanaka M, Adachi Y, Adachi K, and Sato C (2010) Effects of a non-face-to-face behavioral weight-control program among Japanese overweight males: a randomized controlled trial. International journal of behavioral medicine 17(1), 17-24**		
Study name	Effects of a Non-Face-to-Face Behavioral Weight-Control Program Among Japanese Overweight Males: A Randomized Controlled Trial		
			website and control group.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Blinding was not feasible.
	Risk of bias due to deviations from intended interventions (adherence)	Low	A technical error gave some participants in the control group access to the website and resulted in exclusion of 895 participants however this was before randomisation.
	Missing outcome data	High	>20% loss to follow up in each arm. The power was not achieved
	Risk of bias in measurement of the outcome	Some concerns	Subjective outcome assessment may be affected by knowledge of intervention received (no information on blinding).
	Risk of bias in selection of the reported result		Data does not appear to be reported based on results.
	Overall risk of Bias	Some concerns	
	Other outcome details:	N/A	
Source of funding			
Comments			
Additional references	N/A		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		
	Goals and planning		
	Social support	X	

Bibliographic reference/s	**Tanaka M, Adachi Y, Adachi K, and Sato C (2010) Effects of a non-face-to-face behavioral weight-control program among Japanese overweight males: a randomized controlled trial. International journal of behavioral medicine 17(1), 17-24**	
Study name	Effects of a Non-Face-to-Face Behavioral Weight-Control Program Among Japanese Overweight Males: A Randomized Controlled Trial	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	X
	Regulation	
	Comparison of behaviour	

Verheijden et al 2004

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**		
Study name	-		
Registration	Not identifiable		
Study type	RCT		
Study dates	Not reported		
Objective	To study the effectiveness of a web-based nutrition counselling and social support program in people at increased cardiovascular risk in general practice.		
Country/ Setting	14 community practices in Kingston, Canada		
Number of participants / clusters	146 participants: 73 in usual care control group; 73 in Heartweb intervention group		
Attrition	146 participants randomised; 6 withdrawals or lost to follow-up during first 4 months of intervention; 10 further withdrawals or lost to follow-up at 8-months; total of 130 participants provided data at 8-months.		
Participant /community characteristics.		**Intervention group (n=73)**	**Control group (n=73)**
	Age, mean (SD)	62 (11)	64 (10)
	Male, %	52	59
	Education level, %: - Low (≤high school level) - Intermediate - High (≥ BSc level)	 21 42 37	 18 30 52
	Smoking status, %: - Never smoker	 35	 39

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**		
Study name	-		
	- Ex smoker	51	52
	- Current smoker	14	9
	Alcohol >3 glasses/wk, %	56	54
	Exercise >3t times/wk, %	63	61
	Medication use for, n: - Hypertension	67	67
	- Dyslipidaemia	35	31
	- Type 2 diabetes mellitus	13	18
	Stage of change, %: - Precontemplation	15	16
	- Contemplation	3	5
	- Preparation	1	7
	- Action	13	4
	- Maintenance	68	68
	There were no statistically significant differences between intervention and control group at baseline in any of the reported measures. Participants were deemed at risk of cardiovascular disease but were not classed as currently having CVD.		
Method of allocation	GPs sent recruitment letters to 876 people fitting the inclusion criteria in their practices. Participants had height, weight, blood pressure, waist and hip circumferences measured, and blood samples taken at 2 baseline visits. Following baseline assessments, an independent researcher randomly assigned participants into intervention or control group using a computerised table. Control and intervention groups each included 6 pairs (12 individuals) living at the same address and/or with the same surname. People within each pair were randomised into the same group to avoid contamination.		
Inclusion criteria	Aged 40 years and older with at least 1 of the following: hypertension, type 2 diabetes mellitus or dyslipidaemia; ability to use the internet		
Exclusion criteria	None reported.		

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**	
Study name	-	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	-
	Rationale/theory/Goal	Intervention based on transtheoretical model
	Materials used	Control group received usual care (not described).
	Procedures used	At each time point (unclear when this refers to) results sheets including BMI, blood pressure and cholesterol values were sent to participants. Intervention group: in addition to usual care, participants were given a personal registration code of the password protected access to a web-based nutrition counselling and social support program (Heartweb). A reminder of the registration code was sent at 4 months. Counselling messages were included on Heartweb to target readiness to decrease fat consumption. Information packages were presented based on stage of change. These were designed to create or enforce a positive attitude towards decreasing fat consumption, to make people aware of the risks associated with increased fat consumption and to provide practical advice on decreasing fat consumption. In the pre-contemplation stage, awareness was raised of the links between their problem behaviour and disease risk. During the action stage, messages continued to encourage efforts towards behaviour change (e.g. further changes are often recommended). In the maintenance stage, encouragement to maintain current diet was provided. Participants could not progress through to further stages of Heartweb if they had not progressed through stage 1 (they were instead shown stage 1 again on subsequent logins). Care was taken to avoid being patronising within the messages. 4 heart-healthy recipes were included on the Heartweb website and links to other healthy recipe sources were included.

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**	
Study name	-	
		An online bulletin board was included, which had posts from the research team in order to stimulate conversation.
	Provider	-
	Digital platform	Online
	Location	Online
	Duration	8 months
	Intensity	Unclear
	Tailoring/adaptation	Messages were targeted according to readiness to decrease fat consumption, based on the Stages of Change Model. Once a month, Heartweb presented a short assessment tool to determine stage of change and presented an information package based on that stage of change. Appropriate behaviour was assessed through a short checklist to ensure a sufficiently low-fat diet when in the maintenance stage. People who were not eating a low-fat diet were given feedback on this possible misconception and people who were eating a low-fat diet were given appropriate reinforcement.
	Planned treatment fidelity	-
	Actual treatment fidelity	24 of 73 participants randomised to intervention used Heartweb at least once in 8-month study period. Most participants only used the tool once during a period of 8 months.
	Other details	-
Follow up	Outcomes were measured at baseline, 4 and 8 months	
Data collection	Measurements were made by blinded researchers. Questionnaires were given to participants including items on demographic data, smoking status, PA, internet use and medications. Social support section consisted of a version of the 16-item social support scale (Winzelburg et al.). The availability and use of a social support network were measured with the 7-item National Population Health Survey social support scale. A food frequency questionnaire was completed to assess nutrient intake. Participants were contacted by phone and/or mail to obtain complete data due to high partial noncompletion rates. Bodyweight, height, waist and hip circumference and blood pressure (a mean of 3 results per visit used) were all measured at the practice centre. 2 blood samples were taken within a 1-week interval to measure fasting serum cholesterol levels (mean of 2 samples used).	

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**				
Study name	-				
Critical outcomes measures and effect size		**Baseline**		**Change after 8 months**		**P value for difference between intervention and control group in change between baseline and 8 months**
		Intervention	**Control**	**Intervention***	**Control***	
	BMI, kg/m^2, mean (SD)	29.5 (5.2)	29.2 (4.5)	-0.02	-0.01	0.12
	Waist-to-hip ratio, mean (SD)	0.91 (0.08)	0.92 (0.07)	-0.004	-0.01	0.35
	Blood pressure (mmHg), mean (SD)					
	- systolic	134 (14)	136 (18)	-1.9	-5.2	0.37
	- diastolic	81 (9)	80 (11)	-2.5	-3.2	0.72
	Cholesterol, mmol/L mean (SD)					
	- total	5.5 (0.9)	5.4 (1.2)	-0.08	-0.11	0.70
	- HDL	1.56 (0.44)	1.47 (0.39)	-0.01	0.01	0.27
	- LDL	3.2 (0.9)	3.1 (1.0)	-0.07	-0.10	0.20
	- triglycerides	1.9 (1.9)	1.9 (0.8)	-0.02	-0.09	0.15
	There were no significant differences in baseline outcome measures between intervention and control groups. *no SD reported					

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**		
Study name	-		
	There was no significant difference in any outcome measure between users of Heartweb and people in the control group (per protocol analysis) at 8 months follow-up (no data reported). 24/73 participants in the intervention group visited the Heartweb website. A median of 1 visit per person (range 1 to 36) was recorded. Median visit duration was 9 minutes 31. Posting of messages to the bulletin board was limited and hardly any patient-patient interaction occurred.		
Important outcomes measures and effect size	-		
Statistical Analysis	Baseline differences were tested with 2-sample t-tests and chi-squared or Fisher exact tests. Longitudinal data analysis with a compound symmetry covariance structure was used to assess differences between the groups in changes in outcome measurements. Intracluster correlation coefficients of baseline values were calculated, indicating average correlation within a practice is applicable across the whole population. Intention to treat and per-protocol analysis both performed. P values <0.05 were considered statistically significant.		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (low/high/some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation performed by computerised table, by an independent researcher. Care taken to randomise people within the same household and/or surname into the same intervention group to avoid cross-contamination.
	Allocation concealment	Low risk	Blinding of participants was not possible, and outcome assessors were blinded to allocation. Previous research by study group indicated that both control and intervention group thought they were in the intervention group, potentially lessening the bias from non-blinding.

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**		
Study name	-		
	Risk of bias due to deviations from intended interventions (assignment)	High risk	Usual care was still provided to the intervention group, with no report of what this included. As participants were made aware of their risk of CVD from inclusion in the study, there is a likelihood that all participants sought behaviour change advice/action, and it is unclear if this would be been more prominent in either group.
	Risk of bias due to deviations from intended interventions (adherence)	High risk	There was low adherence to the intervention, with 33% of the intervention group engaging at all, and minimal engagement within this group (mostly only 1 log in over 8 months).
	Missing outcome data	Low risk	Attrition was low and intention to treat analysis performed.
	Risk of bias in measurement of the outcome	Low risk	Outcome assessors were blinded, and outcomes were objective.
	Risk of bias in selection of the reported result	High risk	Total energy intake data was not reported as outcome assessment found that there was high self-report from participants of unrealistic daily energy intake (<1000kcal a day).
	Other sources of bias	Some concerns	1 of the GPs who was involved in recruitment was an author on the study publication
	Overall Risk of Bias	High risk	
Source of funding	Netherlands Heart Foundation, the Dr Catharin van Tussenbroek Foundation, the Stichting Fonds Landbouw Export Bureau 1916/1918 Foundation, the Dr Drie Lichten Foundation and the universities of Wageningen and Nijmegen.		

Bibliographic reference/s	**Verheijden M, Bakx JC, Akkermans R, van den HoogenH, Godwin N M, Rosser W, van Staveren W, van Weel C (2004) Web-based targeted nutrition counselling and social support for patients at increased cardiovascular risk in general practice: randomized controlled trial. Journal of medical Internet research 6(4), e44**	
Study name	-	
Comments	Outcomes of perceived social support and social network support were also reported but not extracted as not an outcome of interest for this review. Outcome data for change after 4 months was reported but was not extracted as follow up of at least 6 months was of interest to this review.	
Additional references	-	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	
	Social support	X
	Self-belief	
	Comparison of outcomes	
	Comparison of behaviour	
	Identity	
	Shaping knowledge	
	Regulation	

Appendix F – Summary of characteristics of the interventions

Summary of characteristics of the interventions that showed evidence of effectiveness

Study details	Key features	Intensity/duration	Tailoring	Engagement
Pooled studies (GRADE table 1): Difference found between intervention and control in studies included in pooled diet outcomes and/or weight loss				
Block 2015/2016 (diabetes) Mixed web and text	Emphasis on changing food type and reduction in portion size. Managing stress and sleep. - Small step goal setting - Long term goals. - Tools for tracking - Weekly health information on diabetes - Quizzes - Social support - Feedback on success or failure of goals achievement	Mid-week automated email and phone reminders, also IVR phone calls and supportive mobile phone app 24 weeks	Weekly goal setting individually tailored	87.1 % interacted in 4 or more weeks, 70.6% still interacting by month 6 Engagement promoted through points system and team competition
Cameron 2015 (no chronic conditions) computer tailored programme	Modules on 4 behaviours (diet, PA, smoking, drinking). Theory based messages included text, videos and links to other material. Activity planner to form implementation intentions. *Only effective for fruit and vegetable intake.*	Subjects completed modules one by one. When they completed all modules, they had full access to website containing messages targeting change, 4 weeks	Not reported	973 participants (72 %) viewed a message for at least one behaviour, 672 (50 %) for at least two behaviours, 640 (48 %) for at least three behaviours, and 630 (47 %) for all four behaviours.

Study details	Key features	Intensity/duration	Tailoring	Engagement
Chen 2011 (under 18 years old) Computer tailored programme	Web-based program Activities to enhance self-efficacy and facilitating understanding and use of problem-solving skills, related to nutrition, physical activity, coping information, healthy lifestyles (information via text, graphics, comics, voice over). Interactive dietary preparation software. Setting of realistic goals and planning. Pedometer. (Parents also got 3 internet sessions) *Only effective for fruit and vegetable intake.*	Received information every week for 8 weeks. Logged onto website. Each lesson lasted about 15 minutes Duration not reported	Subjects given progress in graphs based on their average daily steps and fruit and vegetable intake	Not reported
Chen 2017 (under 18 years) App	Based on social cognitive theory Modules via mobile phone and computer. Programme topics on lifestyle modification, weight and stress management. Supplementary information and tips via app messages.	Modules could be completed in 10 mins or less. Asked to complete 1 module per week. S Received bi-weekly texts to encourage and stabilise positive behaviour change 6 months	Customised dashboard to analyse data daily and chart progress over time	75% mobile phone intervention group reported accessing Fitbit app or website several times a week, 20% accessed the programme once a week

Study details	Key features	Intensity/duration	Tailoring	Engagement
	Wristband that tracked activity and could record dietary intake. *Only effective for BMI.*			
Haapala 2009 (overweight/obesity) Computer tailored programme	Theoretical model into educational behavioural interventions, combined with Badura's self-efficacy. Mobile phone weight loss programme with text messages, encouraged an increase in daily activity, and regular weight reporting. Set target weight as short- or long-term goal.	Intensity unclear Duration not reported	Texts indicating the percentage of daily target weight reached; extent of reaching daily weight goal; the amount of food to be consumed.	Not reported
Hutchesson 2018 (overweight/obesity) Computer tailored programme	Based on SCT delivered over various modes – website, app, text, email social media *Only effective for change in weight (measured).*	Website – online quiz with email feedback over week 1. Follow up quizzes in weeks 3, 8, 12, 20. Weeks 1-12, newsletters x1/week, text messages x2/week; weeks 13-26, newsletters x1/2weeks, text messages x1/week 6 months	Automated personalised email feedback focussing on setting realistic weight loss goal, energy requirements, eating behaviours, physical activity levels Self-monitoring app feedback on nutrient content of food and energy expenditure	Engagement ranged from 30% to 89% across modes and features

Study details	Key features	Intensity/duration	Tailoring	Engagement
Patrick 2011 (overweight/obesity) Computer tailored programme	Based on social cognitive theory, informed by behavioural determinants model. Pedometer. Skill building tools. Physical activity and nutrition information and tips. Goal setting and reporting page. 3 components; - initial computerised assessment to tailor recommendations for behavioural targets - web based learning activities - individualised feedback on progress *Only effective for portions of fruit and vegetables a day and total walking per day.*	Weekly web-based activities 12 months.	Personalised feedback, progress graphs of the 5 behaviours	Not reported
Santo 2018; Chow 2015 (CVD)	Advice, motivation and change to lifestyle behaviours was based on the Australian Heart Foundation secondary prevention guide. 4 modules comprising key secondary prevention areas: general cardiovascular health, smoking, physical activity and diet. The diet module provided general healthy eating tips and motivate patients to eat more fruits and vegetables, increase fish intake, decrease unhealthy fat use and	Four text-messages per week, including at least one message per week focussing on diet, for six months in addition to standard care. Duration was 6 months.	Messages were semi-tailored, for example vegetarians would not receive messages on meat and non-smokers information on smoking.	Not reported.

Study details	Key features	Intensity/duration	Tailoring	Engagement
	decrease the levels of salt consumption in their diet.			
Difference found between intervention and control in studies not pooled in diet outcomes and/or weight loss (GRADE table 2)				
Bossen 2013 (musculoskeletal conditions) Computer tailored programme	Based on behaviour graded activity. Baseline test, goal setting and time contingent objectives. Text messages to promote activity. Online web-based modules to promote favourite recreational activity. Information on osteoarthritis, lifestyle and videos.	New module posted online each week. Each participant was able to repeat or modify the modules each week depending on the reason they did not complete it, if applicable. 9-week program.	8 weekly modules tailored to baseline and short-term goals Weekly evaluations completed which generated texts.	Not reported Automatic emails used to encourage use if no login for 2 weeks
Dale 2015 (CVD/hypertension) Text messaging	Text messages with supporting website. Messages addressed; - illness perception and medication related benefits, - Physical activity - healthy heart diet, - stress management - smoking cessation Pedometer provided to assist with self-monitoring of daily PA *Only effective for number of people eating ≥5 portions of fruit and vegetable a day.*	x7 messages weekly (for 12 weeks x 5 messages weekly for 13-24weeks 6 months	Text messages tailored to suboptimal behaviour. Subjects required to respond triggering automated tailored response. Could request personalised feedback, questions answered in 48 hours	46/61 (75%) of participants logged onto the website at least once. No of visits to the website per person ranged from 0 to 100 (median 3) over the 6-month intervention period

Study details	Key features	Intensity/duration	Tailoring	Engagement
Greene 2012 (overweight/obesity) Social network	Social media network, Accelerometer Wireless weight scale for uploading weight data. Connections with others in the network, public postings, view others' postings, view own activity and weight and complete against others in the network on physical activity. Individually - goal setting and receiving of motivational messages. *Only effective for physical activity.*	Accelerometer and a weight scale that both wirelessly uploaded data for tracking over time. 6 months.	Unclear	Not reported
Haggerty 2017 (cancer) Text messaging	Text messages providing feedback, support, prompting. Quiz items and strategies to adhere to behaviours associated with long term weight management. Calorie and exercise goals. Recording of food and beverage intake. *Only effective for total physical activity and walking activity.*	3 to 5 personalised and interactive text messages daily 6 months	Feedback was personalised	Not reported
Jane 2017 (overweight/obesity)	Access to secret group and weight management programme. Encouraging social interaction	6 months	Unclear	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
Social media, networking, chat forums	*Only effective for change in weight, BMI and waist circumference.*			

1

2 **Summary of characteristics of studies that did not show evidence of effectiveness, digital and mobile intervention vs control**

Study details	Key features	Intensity/duration	Tailoring	Engagement
Pooled studies (GRADE table 1): No differences found between intervention and control in pooled physical activity outcomes				
Cameron 2015 (no chronic conditions) computer tailored programme	Modules on 4 behaviours (diet, PA, smoking, drinking). Theory based messages included text, videos and links to other material. Activity planner to form implementation intentions. *Not effective for physical activity.*	Subjects completed modules one by one. When they completed all modules, they had full access to website containing messages targeting change, 4 weeks	Not reported	973 participants (72%) viewed a message for at least one behaviour, 672 (50 %) for at least two behaviours, 640 (48 %) for at least three behaviours, and 630 (47 %) for all four behaviours
Chen 2011 (under 18 years old) Computer tailored programme	Web-based program Activities to enhance self-efficacy and facilitating understanding and use of problem-solving skills, related to nutrition, physical activity, coping information, healthy lifestyles (information via text, graphics, comics, voice over). Interactive dietary preparation software.	Received information every week for 8 weeks. Logged onto website. Each lesson lasted about 15 minutes Duration not reported	Subjects given progress in graphs based on their average daily steps and fruit and vegetable intake	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
	Setting of realistic goals and planning. Pedometer. (Parents also got 3 internet sessions) *Not effective for change in BMI.*			
Chen 2017/2019 (under 18 years) App	Based on social cognitive theory Modules via mobile phone and computer. Programme topics on lifestyle modification, weight and stress management. Supplementary information and tips via app messages. Wristband that tracked activity and could record dietary intake. *Not effective for physical activity, fruit and vegetable portions, fast food consumption and PQoL.*	Modules could be completed in 10 mins or less. Asked to complete 1 module per week. S Received bi-weekly texts to encourage and stabilise positive behaviour change 6 months	Customised dashboard to analyse data daily and chart progress over time	75% mobile phone intervention group reported accessing Fitbit app or website several times a week, 20% accessed the programme once a week
Dale 2015 (CVD/hypertension) Text messaging	Text messages with supporting website. Messages addressed; - illness perception and medication related benefits, - Physical activity	x7 messages weekly (for 12 weeks x 5 messages weekly for 13-24weeks	Text messages tailored to suboptimal behaviour. Subjects required to respond triggering automated tailored response.	46/61 (75%) of participants logged onto the website at least once. No of visits to the website per person ranged from 0 to 100 (median 3) over

Study details	Key features	Intensity/duration	Tailoring	Engagement
	- healthy heart diet, - stress management - smoking cessation Pedometer provided to assist with self-monitoring of daily PA *Not effective for physical activity, change in BMI and waist-to-hip ratio.*	6 months	Could request personalised feedback, questions answered in 48 hours	the 6-month intervention period
Glasgow 2012 (diabetes) Computer tailored programme	Based on social-ecological and social cognitive theory. Computer assisted self-management. Website included participant information, moderated forum, community resources, quizzes, motivational tips. Choose achievable goals and recorded progress. Received immediate feedback on success of meeting goals over past 7 days.	Periodic motivational calls and prompt to use website. Duration: unclear	Goals were tailored to each individual	Not reported
Hutchesson 2017 (overweight/obesity) Computer tailored programme	Based on SCT delivered over various modes – website, app, text, email social media	Website – online quiz with email feedback over week 1. Follow up quizzes in weeks 3, 8, 12, 20.	Automated personalised email feedback focussing on setting realistic weight loss goal, energy	Engagement ranged from 30% to 89% across modes and features

Study details	Key features	Intensity/duration	Tailoring	Engagement
		Weeks 1-12, newsletters x1/week, text messages x2/week; weeks 13-26, newsletters x1/2weeks, text messages x1/week 6 months	requirements, eating behaviours, physical activity levels Self-monitoring app feedback on nutrient content of food and energy expenditure	
Jennings 2014 (diabetes) Computer tailored programme	Based on the theory of planned behaviour. Self-management approach to encourage skills and abilities to initiate and maintain behaviour change. Implemented; educational modules, social support, positive reinforcement, personalised feedback, weekly goal setting and planning. Educational modules operationalised theory of planned behaviour constructs and self-management. Pedometer. Communication was facilitated through a discussion board	Weekly educational modules. Weekly email reminders 12 weeks.	Personalised feedback based on meeting their predefined goals for each of the 12 weeks. Designed to be perceived as personally relevant and encourage continued use of the logbooks.	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
Kanera 2017 (cancer) Computer tailored programme	Used social cognitive behaviour change theories and models. Self-management modules (physical activity, diet, smoking cessation, return-to-work, social relationships, fatigue, anxiety, depression). Feedback on baseline scores and advice on the most relevant modules. Module advice aimed at consciousness raising (to change awareness and risk perception). Focus on sustainable behaviour change by stimulating activities that fit optimally to individuals' capabilities and preferences. Goal setting, action and coping planning, reattribution training and self-monitoring	Respondents were encouraged to follow the PA recommendations, no specific prescriptions were provided concerning frequency, intensity, duration, and mode of specific exercises. 6 months	The module-content was personalized by means of computer tailoring and customized to personal characteristics, cancer-related issues, motivational behavioural determinants and current lifestyle behaviour. Personalised feedback	Not reported
Kernot 2019 (pregnancy – postpartum) Computer-tailored programme/app	Clusters were groups of friends who were challenged with walking 500,000 steps in 50 days. Different awards were given for step achievements.	Daily tips sent, weekly emails containing each individual's progress. Emails were also sent 5 days prior, 3 days prior and the day before the	None.	Reported for MSIU only. No. times visited app in 50 days, mean (95% CI): 26 (21.5, 30.5).

Study details	Key features	Intensity/duration	Tailoring	Engagement
	Teas could compare progress with each other. MSIU app consisted of 7 tabs: Dashboard Log My Steps tablet My Group tablet Achievements tablet Compare Groups tablet Settings tablet Help tablet	walking challenge started.		No. days logged steps, mean (95% CI): 7 (4.2, 9.8). No. posts on the group message wall, mean (95% CI): 9 (5.9, 12.1).
Murray 2019 (no chronic conditions)	Sensors (wifi beacons) were placed in the vicinity of participating workplaces at specific locations to encourage physical activity within a 2km radius of the worksite, including prompts and cues to facilitate habit formation. Financial incentives were included, every minute walked equated to 1 point, which could be redeemed for £0.03. The website included sections for: • Monitoring and feedback • Rewards • Maps for local walks	Participants were encouraged to undertake 150 mins/week physical activity. To increase motivation, behaviour change and intrinsically motivated behaviour, regular tailored motivational emails, tailored feedback, information on walking routes in the vicinity of the participating workplaces and links to other resources such as physical activity advice and healthy eating guidelines were sent.	Tailored feedback.	Percentage (SD) of intervention days participants walked for at least 10 min captured via the physical activity monitoring system: 24.7. Percentage (SD) of intervention weeks participants logged onto the website: 37.8 Percentage (SD) of earned points redeemed: 39.3 Days to non-usage attrition (recording daily activity via physical activity monitoring system) mean (SD): 53.7 (61.2) Days to non-usage attrition (PAL website) mean (SD): 31.7 (88.9) Number of participants with non-usage attrition for

Study details	Key features	Intensity/duration	Tailoring	Engagement
	• Health information (physical activity • Health information (other) • Discussion forum	Duration was 6 months.		recording daily activity via physical activity monitoring system, n (%): 375 (88.9) Number of participants with PAL website non-usage attrition, n (%): 403 (96.4) Details of engagement with different intervention components and the relationship between that and steps/day can be found in the evidence table (Appendix E) and the GRADE table (Appendix G).
Olson 2018 (pregnancy) Computer tailored programme	Self-directed, integrated online and mobile phone behavioural intervention. Access to 3 behaviour change tools; weight gain tracker, goal setting and self-monitoring toll, health information (tips, articles and FAQs).	Reminders and informational content, weekly via e-mail. Reminded weekly to login. Participants decided what, when, and how much they would use the tools made available to them. Duration: unclear	Not reported	Logged into study web site at least once in the intervention group, median n (%): 946 (84.0) Logged-in each 45 days of participation (adherent), median n (%): 519 (46.1).
Patrick 2011 (overweight/obesity)	Based on social cognitive theory, informed by behavioural determinants model. Pedometer.	Weekly web-based activities 12 months.	Personalised feedback, progress graphs of the 5 behaviours	Not reported.

Study details	Key features	Intensity/duration	Tailoring	Engagement
Computer tailored programme	Skill building tools. Physical activity and nutrition information and tips. Goal setting and reporting page. 3 components; - initial computerised assessment to tailor recommendations for behavioural targets - web based learning activities - individualised feedback on progress *Not effective for change in BMI or body weight.*			
Smith 2016 (pregnancy) Computer tailored programme	Website including; goal-setting modules, problem-solving modules, journal, calendar to track progress, community forum to interact with other participants. Instructed to gradually work up to ≥150 minutes of moderate PA per week (in ≥10-minute bouts) by week 19 gestation and sustain at least this amount until delivery.	Week-long data collection periods at 10-14 weeks, 24-26 weeks, 34-36 weeks.	Not reported	Not reported
No difference found between intervention and control in studies not pooled in physical activity outcomes (GRADE table 2)				

Study details	Key features	Intensity/duration	Tailoring	Engagement
Agboola 2016 (diabetes) Text messages	Based on transtheoretical model of behaviour change. Text messages to; - provide bite-sized coaching based on goals. - feedback on previous day's activity - coaching, health education, motivation and reminders Generally – focus on stage of behaviour change and additional ways to engage	At least 2 text messages/day. per day (between 9am-11am and 6pm); 2 messages a week were interactive 2-way messages. 6 months	Messages were tailored according to goals and baseline data. Designed to target an individual's stage of behaviour change	35% (16) participants in the intervention group engaged with the intervention by responding to at least 1 text message per week for the entire duration.
Block 2015/2016 (diabetes) Computer tailored programme and text messages	Weekly small step goal setting For PA long-term goals of 150-300 minutes of activity/week. Emphasis on changing food type and reduction in portion size. Managing stress and sleep. - Tools for tracking - Weekly health information on diabetes - Quizzes - Social support - Feedback on success or failure of goals achievement .	Mid-week automated email and phone reminders, also IVR phone calls and supportive mobile phone app 24 weeks	Weekly goal setting individually tailored	87.1% interacted in 4 or more weeks, 70.6% still interacting by month 6

Study details	Key features	Intensity/duration	Tailoring	Engagement
Bossen 2013 (musculoskeletal conditions) Computer tailored programme	Based on behaviour graded activity, based on operant behaviour principles. Graded activity included goal setting, time contingent objectives, text messages (encourages positive reinforcement of gradual activity in the presence of pain). Online web platform; - increasing activity in a time consistent way, - online modules - information and videos Weekly evaluations generated text messages.	Automatic emails if no login for 2 weeks. Intensity varied according to each participant, is self-paced. 9 weekly modules available. 9-week programme.	Test performances at baseline and short-term goals, generated 8 tailored weekly modules.	Module completion rate ranged from 80% in the first module to 40%. 94% of participants in the intervention group started the first module. 19.0% of participants fulfilled all modules and 46.0% reached the threshold of adherence (6/9 modules completed). Non-adherence was higher in the subgroup of people with co-morbidity (25/35; 71%) compared with no co-morbidity (29/65; 45%).
Gell 2015 (No chronic conditions) Text messages	Text messages that were motivational, informational and specific to performing physical activity. Texts included; - recommended amounts of activity - suggestions of ways to meet these - self-regulation strategies; goal setting, relapse prevention, engaging social support, self-	Approximately x3 messages/week, sent during typical wake time hours 24 weeks	Not reported	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
	monitoring, time management, reinforcement - strategies to address barriers identified from self-efficacy instrument All messages were unique			
Golsteijn 2018 (cancer) Computer tailored programme	Structured in line with behavioural change theories. Access to interactive web content; - role model videos - home exercise instruction videos - model for goal setting (using pedometer) Advice based on behaviour change theories and targets, and motivational constructs.	Computer-tailored advice at three time points (at baseline, after 2 months and after 3 months). Online and by mail	Tailored advice based on baseline information. Tailored advice and feedback.	Not reported
Gomez 2016 (no chronic conditions) Text messages	eHealth via email mHealth via SMS 5 rounds; Round 1, to inform how to successfully plan behaviour change	6 months	Fully automated tailored feedback messages Personal feedback when needed.	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
	Round 2, overview of their activity level and ideas on overcoming difficulties around behaviour change. Feedback messages Round 3, encouragement to act on plans. Feedback messages Round 4, progress evaluation Round 5, follow-up assessment			
Greene 2012 (overweight/obesity) Social media, networking	Social media network, Accelerometer Wireless weight scale for uploading weight data. Connections with others in the network, public postings, view others postings, view own activity and weight and complete against others in the network on physical activity. Individually - goal setting and receiving of motivational messages. *Not effective for change in weight.*	Accelerometer and a weight scale that both wirelessly uploaded data for tracking over time. 6 months.	Unclear	Not reported
Haggerty 2017 (cancer) Text messages	Text messages provided; - feedback - support - prompting -quiz items	3 to 5 interactive text messages daily 6 months	Text messages personalised	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
	-strategies to adhere to behaviours - encouraged to meet calorie and exercise goals Recorded intake on paper and via website *Not effective for change in weight (kg) and waist circumference change (cm).*			
Hansen 2012 (no chronic conditions) Computer tailored programme	Based on theories of stage of change and planned behaviour. Website, 3 parts; - personal page, individually tailored advice, personal profile - training programmes and general recommendations - forum and discussion page for questions	Not reported	The individually tailored advice with a general introduction, normative feedback, and general advice about using the tools on the website.	71% of subjects did not log on to the website in the 6 month period, 22% logged on once, 5% logged on several times and 2% logged on several times and made a personal profile.
Jane 2017 (overweight/obesity) Social network	Social media group, access to weight management programme, encouraged to interact with others in the group *Not effective for energy intake and steps per day.*	Study coordinator posted to the group once a week 6 months	Unclear	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
Laing 2014 (overweight/obesity) App	Current weight, goal and goal rate of change. Database of information. Logging of food and activity. Social networking feature that enables sharing of progress and finding friends.	Not reported	Shows daily individualised goal. Real time reports showing trends and summaries. Can set reminders to complete logs	97% of participants in the intervention group logged in in the 1st month but only 35% did so in the 6th month.
Simons 2015 (those under 18 years) Digital gaming	Active video games – 4 active move games at the start, 2 additional games after 4 months Additional controls for family and friends	Asked to provide daily reports on their use. Asked to substitute for non-active gaming for at least an hour/week 10 months	Unclear	Not reported
Verheijden 2004 (CVD/hypertension) Computer tailored programme	Based on transtheoretical model. Web based nutrition counselling and social support. Counselling messages; - designed to create or enforce positive attitude - raise awareness of risks	Could not progress to additional stages if they had not progressed through stage 1 Intensity unclear 8 months	Messages were targeted according to readiness to change based on the Stages of Change Model. Feedback during maintenance stage based on checklist.	24/73 participants in the intervention group visited the Heartweb website. A median of 1 visit per person (range 1 to 36) was recorded. Median visit duration was 9 minutes 31. Posting of messages to the bulletin board was limited and hardly any patient-patient interaction occurred

Study details	Key features	Intensity/duration	Tailoring	Engagement
	- provide practical advice - encourage efforts towards behaviour change - encouragement to maintain Links to other sources. Online bulletin board.			

Summary of studies found to be ineffective (in terms of statistical significance), digital and mobile intervention vs other intervention:

Study details	Key features	Intensity/duration	Tailoring	Engagement
No difference found between intervention and control in studies not pooled in diet outcomes and/or weight loss (GRADE table 3)				
Alexander 2010 (no chronic conditions) Computer tailored programme	Website included; - core content - illustrations - links to more detail - special features to supplement session content - optional short video and audio files offered to reinforce text on behavioural strategies	Web program was divided into 4 intervention sessions at 1, 3, 13, and 15 weeks	Tailored and untailored website. Tailored site matched content to dietary preferences and interests. Behavioural sessions tailored to participant's stage of change and designed to increase motivation and self-efficacy.	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
Allen 2013 (overweight/obesity) App	Based on eclectic theoretical approach using multiple behavioural theories. Weight loss application promoted self-management and mindful empowerment. Recorded progress via touch screen – instant real-time responses allowed participant to track progress (included charts and graphs).	Provided real time feedback and motivators and opportunities for social networking and support. 6 months	No tailoring reported for self-monitoring smartphone intervention.	Not reported.
Apiñaniz 2019 (overweight/obese) App (primary delivery method) and text messages	Health advice and exercises were given as recommendations from the WHO, US Centers for Disease Control and Prevention, and NICE. AKTIDIET app reinforced recommendations and provided a program for aerobic exercise and muscle training, videos on how to do the exercises and a record of food intake. Texts were sent to reinforce the advice and to motivate.	6 months total 1/day for 1 month, then 2/week for 5 months	No tailoring reported for app intervention.	Adherence to recommendations on fruit and vegetable intake and physical activity
Dassen 2018 (overweight/obese)	Centred around creating a restaurant to the participants' preferences Working memory exercises	Minimum of 20 training sessions and a maximum of 25 training sessions, with a	Task difficulty was based on performance.	Not reported.

Study details	Key features	Intensity/duration	Tailoring	Engagement
Computer-tailored programme	Psychoeducation about weight loss, healthy lifestyle, and environment of unhealthy behaviours. Diet planning in daily life Coping strategies	minimum interval of 24 h and a maximum interval of 48h between sessions. If participants missed more than five sessions, they dropped out of the study.		
Dunn 2019 (cancer) App	Tracking food consumption with photographing food using the Meal-Logger app. The app allows users to rate foods and comment on others' foods. Participants received training on the Traffic Light Diet. Podcasts included weight loss techniques based on social cognitive theory and the diabetes prevention programme were listened to biweekly	Multiple times a day, whenever food is consumed for 6 months.	None.	Number of records of diet mean (SE): photo diary group – 46.2 (50.1); calorie diary group – 69.6 (61.0); p = 0.18. Number of podcasts downloaded total: photo diary group – 14.2 (13.0); calorie group – 15.0 (13.9); p = 0.86. Correlation between number of days tracked and weight change, r (p value): photo diary group – 0.51 (0.06); calorie diary group – 0.70 (0.004).
Ferrante 2018 (cancer) Computer-tailored programme	A handout with goals for weight loss, calorie intake and physical activity. 1 session containing: - educational and motivational materials -self-monitoring - integration with popular PA trackers - recipes and meal plans	1 30-minute session, initially for 6 months, then extended to 12 months for intervention group when wait-list control received intervention (data in review is for first 6 months only)	None.	Number of days logged in per week mean (SD): intervention - months 1-3, 3.01 (2.07); months 4-6, 2.30 (2.30); months 7-9, 1.86 (2.32); months 10-12, 1.46 (2.29); delayed intervention: months 1-3, 2.30 (2.27); months 4-6 1.14 (1.64).

Study details	Key features	Intensity/duration	Tailoring	Engagement
	- loyalty points - social support via forums and challenges - videos from certified personals trainers			Number of days logged food per week mean (SD): intervention – months 1-3, 1.69 (1.84); months, 4-6, 0.60 (0.87); months 7-9 0.34 (0.72); 0.11 (0.26); delayed intervention – months 1-3, 1.50 (1.85); months 4-6, 0.71 (1.17).
Schwarzer 2018 (no chronic conditions) Computer tailored programme	Intervention contained: - personalised feedback - updates and prompts about dietary status - rewards based on meeting set goals and credits The content and advice of the intervention would change throughout the study period depending on whether participants self-reported that they were self-efficacious, meeting their goals and general progress. The study also evaluated the effect of self-efficacy, planning, and outcome expectancies on fruit and vegetable intake.	6 months with continued access to the platform. Participants could use it as often as they chose.	Yes, as described.	Not reported.
No difference found between intervention and control in studies not pooled in physical activity outcomes (GRADE table 3)				
Kolt 2016 (no chronic conditions)	Web promoted change via; - online step log - pedometer for monitoring	Intensity not reported	Not reported	Average time on website per week at 12-18moths

Study details	Key features	Intensity/duration	Tailoring	Engagement
Computer tailored programme	- self-monitoring features - online educational materials Second web arm additionally had; - tools to promote user-to-user interaction via social networking, private messaging, posting status updates	Participants were able to access and use these interventions for the 18 of the trial		(seconds): Web 1.0 Mean 88.99, Web 2.0: 188.9. Average number of website visits per week at 12-18 months (months), Web 1.0 Mean 0.52, Web 2.0 Mean 1.74.
Marcus 2007 (overweight/obesity) Computer tailored programme	Tailored feedback was based on the transtheoretical model. Website; - educational and motivational materials - goalsetting function - completed logs - links to other sites Website with tailoring arm additionally included; - reminders and tailored responses	Tailored arm had weekly email prompts (month 1), biweekly (month 2 and 3), monthly (months 4 to 12). Prompted to complete monthly questionnaires.	Tailored feedback	The tailored Internet arm logged onto the study Web site significantly more times during the study compared with the standard Internet arm.
Polgreen 2018 (diabetes) Text messages	Wearable only Wearable with reminders; - daily text message reminders Wearable with reminders and goal setting;	To wear for 6months. Daily text message. 6 months	Bi-directional text messaging to tailor messages according to previous day.	Not reported

Study details	Key features	Intensity/duration	Tailoring	Engagement
	- daily goal setting text messages, reminders to wear the device			
Spittaels 2007 (no chronic conditions) Computer tailored programme	Advice tailored in content and approach to the constructs of theory of planned behaviour. Activity advice Action plan Provided advice on intentions, attitudes, self-efficacy, social support, knowledge, benefits and barriers. Followed by targeted email tip sheets	Targeted emails for 8 weeks	Tailored advice appeared immediately containing feedback and tips and suggestions.	Not reported
Tanaka 2010 (overweight/obesity) Computer tailored programme	To target behaviours by self-efficacy and intention. Booklet assisted by computer tailored advice. Pedometer Participants evaluated present status and choose items of behaviour to target behaviours that could be improved.	Received for 1 month and continued to monitor targeted behaviours daily for 7 months.	Progress on a graph targeted behaviours were evaluated as good, fair or poor.	Not reported

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Appendix G – GRADE tables

GRADE profile 1: Pooled Data: Behavioural and health outcomes for digital and mobile health interventions (change from baseline intervention vs control)

Quality assessment										
No. of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No. of participants	Effect	Quality of evidence for outcome	Importance of outcome
Fruit & veg intake in adults										
Baseline vs. ≥ 6 months										
3[1]	RCT	Serious[a]	Very serious[b]	No serious	No serious	No	2198	MD 0.74 [0.22, 1.27]	Very Low	N/A
Fruit & veg intake in those under 18 years										
Baseline vs. ≥ 6 months										
2[2]	RCT	Serious[c]	No serious	No serious	Serious[d]	No	69	MD 0.56 [0.12, 0.99]	Low	N/A
Physical activity (min/week) in adults										
Baseline vs. ≥ 6 months										
8[3]	RCT	Serious[e]	Very serious[b]	No serious	Serious[f]	No	3702	SMD 0.30 [0.01, 0.59]	Very Low	N/A
BMI in adults										
Baseline vs. ≥ 6 months										
11[4]	RCT	Very serious[g]	Serious[h]	No serious	Serious[d]	No	2297	MD -0.46 [-0.92, 0.00]	Very Low	N/A
BMI in those under 18 years										
Baseline vs. ≥ 6 months										
2[5]	RCT	Serious[c]	Serious[d]	No serious	Serious[d]	No	69	MD -0.60 [-2.26, 1.06]	Very Low	N/A
Weight change (kg) in adults										
Baseline vs. ≥ 6 months										

7[6]	RCT	Very serious[h]	Serious[f]	No serious	Serious[d]	No	1109	MD-1.25 [-2.36, -0.13]	Very Low	N/A
GWG (kg) in pregnant women										
Baseline vs. ≥ 6 months										
2[7]	RCT	Serious[i]	Serious[f]	No serious	Very serious[j]	No	1732	MD -0.65 [-1.32, 2.61]	Very Low	N/A

CI confidence intervals
Inconsistency - downgraded pooled analyses by 1 level (indicating 'serious' inconsistency) when the I^2 statistic was ≥50% and 2 levels (indicating very serious inconsistency) when the I^2 statistic was ≥75%
Imprecision - If the confidence interval crosses either the lower or upper MID threshold this indicates 'serious' risk of imprecision and downgraded 1 level. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate and downgraded 2 levels. Default MIDs were used where no established MID's for individual outcomes are found (0.75 and 1.25 for dichotomous outcomes and 0.5*SD of control group at baseline for continuous outcomes). Where data is pooled in analyses, the study with the largest weight was used as the control group for default MID calculations. Where the 95% CI does not cross either MID threshold, the evidence is assessed as having 'no serious' risk of imprecision unless the effect estimate is derived on the basis of few events and a small study sample (that is, less than 300 events for dichotomous outcomes or total sample size less than 400 for continuous outcomes). In that case the results were downgraded one level for 'serious' imprecision to reflect uncertainty in the effect estimate

1. Block 2015/2016, Cameron 2015, Patrick 2011
2. Chen 2011, Chen 2017
3. Cameron 2015, Chen 2019, Hutchensson 2018, Jennings 2014, Kanera 2017, Kernot 2019, Patrick 2011, Santo 2018
4. Chen 2019, Dassen 2018, Ferrante 2018, Glasgow 2012, Hutchensson 2018, Kernot 2019, Block 2015/2016, Dale 2015, Jane 2017, Patrick 2011, Santo 2018
5. Chen 2011, Chen 2017
6. Apiñaniz 2019, Block 2015/2016, Dunn 2019, Ferrante 2018, Haapala 2009, Hutchensson 2018, Patrick 2011
7. Olson 2018, Smith 2016

a) Downgraded 1 level as outcomes not blindly assessed in all studies
b) Downgraded 2 levels as I^2 > 75%, indicating heterogeneity.
c) Downgraded 1 level as both studies were not conducted in a blinded manner. Non blinding may have caused some bias in subjective outcomes
d) Downgraded 1 level as one 95% confidence interval crosses the default MID threshold
e) Downgraded 1 level due to attrition bias, deviations from assignment, missing outcome data and lack of blinding across studies. <33% of the outcome weight came from studies at high risk of bias.
f) Downgraded 1 level as one 95% confidence interval crosses the default MID threshold
g) Downgraded 2 levels as potential bias in self-reported outcomes, deviations from assignment and adherence, randomisation process, lack of registration of protocols and attrition bias across studies
h) Downgraded 1 level as I^2 > 50%, indicating heterogeneity
i) Downgraded 1 level as one study did not reach statistical power
j) Downgraded 2 levels as 95% CI crosses 2 MID thresholdswngraded 1 level as potential bias from missing outcome data.

GRADE profile 2: Individual data: Behavioural and health outcomes for digital and mobile health interventions (change from baseline intervention vs control), studies that could not be pooled

Quality assessment		Effect		

Name of study	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No. of participants		Quality of evidence for outcome	Importance of outcome
Diet										
Baseline vs. ≥ 6 months										
Hutchesson 2018 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[b]	No	57	Fruit g/day MD 21.65 (-19.64 to 62.95) p=0.304 Veg g/day MD 41.61 (-30.77 to 62.95) p=0.260	Very Low	N/A
Laing 2014 (overweight/obesity)	RCT	Very serious[c]	N/A	No serious	Very serious[b]	No	212	Healthy diet in past 7 days, between group difference 0.29 (–0.51 to 1.1), p=0.48	Very Low	N/A
Dale 2015 (CVD/hypertension)	RCT	Very serious[c]	N/A	No serious	Serious[d]	No	123	No. of participants ≥5 Fruit and vegetable intake OR 2.8, (1.3 to 6.1) p value not reported	Very Low	N/A
Dassen 2018 (overweight/obese)	RCT	Very serious[c]	N/A	No serious	Serious[f]	No	51	Healthy eating index (out of 25), mean (SD): Intervention baseline 18.88 (3.44) and 6 months 20.56 (2.31); control baseline 18.90 (3.43) and 6 months 20.15 (2.96); β(SE) 0.24 (0.36).	Very low	N/A
Santo 2018 (CVD)	RCT	No serious	N/A	No serious	Takeaway meals: serious[d] Others: No serious	No	352	All at 6 months. Servings of vegetables a week MD 5.94 (4.61, 7.26) p <0.001 Servings of fruit a week MD 3.80 (2.78 – 4.83) p<0.001. Takeaway meals a week MD -0.87 (-1.22, -0.51) p<0.001. Salt intake control (unclear how measured) MD 1.39 (1.26, 1.52) p<0.001	Moderate/ High	N/A
Kanera 2017 (cancer)	RCT	Serious[a]	N/A	No serious	Serious[d]	No	87	Vegetable intake g/day MD 7.4 (-3.73 to 18.53) p=0.19	Low	N/A
Diet in those under 18 years										
Baseline vs. ≥ 6 months										
	RCT	Serious[a]	N/A	No serious	Serious[e]	No	270	% >1400 ml/week of sugar sweetened beverages OR 0.67	Low	N/A

Simons 2015 (those under 18 years)								(0.34 to 1.29) p value not reported		
Physical activity in adults										
Baseline vs. ≥ 6 months										
Gell 2015 (No chronic conditions)	RCT	Serious[a]	N/A	No serious	Serious[e]	No	87	Mean steps/day at 24 weeks (6867.7 SD±2227.0 vs. control 6189.0 SD±2297.0, MD 664.5 (-375.6 to 1704.6) p= .06)	Low	N/A
Gomez 2016 (no chronic conditions)	RCT	Serious[a]	N/A	No serious	Serious[f]	No	373	Total PA (average daily physical activity (light, moderate, and vigorous) eHealth vs control p =0.09 (-0.98 to 13.23), mHealth vs control p=0.63 (-5.95 to 9.79)	Low	N/A
Hansen 2012 (no chronic conditions)	RCT	Serious[a]	N/A	No serious	Serious[f]	No	12287	Total PA min/wk median (25th-75th percentile), intervention 1575 (845–2580), control 1560 (840–2520)	Low	N/A
Murray 2019 (no chronic conditions)	cRCT	Serious[a]	N/A	No serious	Serious[f]	No	457	Pedometer steps/day mean (SD): baseline 7977 (3602) and 6 months 6990 (3078). % (SD) of days walked for at least 10 mins, 24.7 (21.8). % (SD) of intervention weeks participants logged onto website, 37.8 (32.5). Associations between using components and steps/day (β, p value, significant results only; all others in Appendix E): monitoring and feedback: 66.3, <0.001 discussion forums: -77.4, 0.004	Low	N/A
Greene 2012 (overweight/obese)	RCT	Serious[a]	N/A	No serious	Serious[f]	No	513	164% increase in leisure time walking in intervention group, compared with a 47% increase for the control group. No sig difference between intervention and control for all PA min/wk (unable to calculate effect size from data available)	Low	N/A
Laing 2014 (overweight/obesity)	RCT	Very serious[c]	N/A	No serious	Very serious[b]	No	212	PA in past 7 days between group difference 0.20 (–0.49 to 0.90), p=0.56	Very low	N/A

Dale 2015 (CVD/hypertension)	RCT	Very serious[c]	N/A	No serious	Serious[e]	No	123	No. of participants physically active OR 1.4, (0.6 to 3.1), p value not reported	Very low	N/A
Santo 2018 (CVD)	RCT	No serious	N/A	No serious	No serious	No	352	Total physical activity MET min/wk MD 345 (195, 495) p<0.001.	High	N/A
Agboola 2016 (diabetes)	RCT	Very serious[c]	N/A	No serious	Serious[e]	No	126	Total monthly step count RR 3.04 (0.36 to 25.93)	Very low	N/A
Golsteijn 2018 (cancer)	RCT	Serious[a]	N/A	No serious	No serious	No	478	Days ≥30 mins PA, MD 0.36 (-0.105 to 0.825, p=0.1294	Moderate	N/A
Haggerty 2017 (cancer)	RCT	Serious[a]	N/A	No serious	Very serious[b]	No	41	Change (median, interquartile range) of total PA METs/wk - intervention: 588.0 (88.0 to 931.2). control: 1,454.5 (619.9 to 2,655.4), p=0.046	Very low	N/A
Bossen 2013 (musculoskeletal conditions)	RCT	Very serious[c]	N/A	No serious	Very serious[b]	No	199	Total PA (accelerometer min/day) MD 24 (0.5 to 46.8)	Very low	N/A
BMI in adults										
Baseline vs. ≥ 6 months										
Verheijden 2004 (CVD/hypertension)	RCT	Very serious[c]	N/A	No serious	Very serious[b]	No	146	Change in BMI mean, intervention -0.02, control -0.01, p value = 0.12	Very low	N/A
BMI in those under 18 years										
Baseline vs. ≥ 6 months										
Simons 2015 (those under 18 years)	RCT	Serious[a]	N/A	No serious	Very serious[b]	No	270	BMI-SDS change, (β (95% CI)): 0.093 (0.015; 0.17)	Very low	N/A
Weight in adults										
Baseline vs. ≥ 6 months										
Greene 2012 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[b]	No	349	Weight loss in lbs (intervention mean 5.2 vs control mean 1.6 pounds), p value or SD not reported	Very low	N/A

Jane 2017 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[b]	No	19	Between group difference % weight loss: mean -4.8% (SE 1.1), p= 0.01	Very low	N/A
Laing 2014 (overweight/obesity)	RCT	Very serious[c]	N/A	No serious	Very serious[b]	No	212	Between group mean difference weight loss (kg) –0.30 (–1.50 to 0.95), p=0.63	Very low	N/A
Block 2015/2016 (diabetes)	RCT	Serious[a]	N/A	No serious	Very serious[f]	No	339	Between group mean difference weight loss (kg) -2.00 (-2.01 to -1.99), p<0.001 N (%) who achieved at least a 5% weight loss: intervention 48/136 (35.3), control 13/156 (8.3), p<.001	Very low	N/A
Sedentary time in adults										
Baseline vs. ≥ 6 months										
Hutchesson 2018 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[b]	No	57	Total sitting time min/day MD: 9 (-115 to 132), p =0.892	Very low	N/A
Santo 2018	RCT	No serious	N/A	No serious	No serious	No	352	Inactive <600 MET min/wk at 6 months MD 0.55 (0.47, 0.64) <0.001.	High	N/A

CI confidence intervals
Imprecision - If the confidence interval crosses either the lower or upper MID threshold this indicates 'serious' risk of imprecision and downgraded 1 level. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate and downgraded 2 levels. Default MIDs were used where no established MID's for individual outcomes are found (0.75 and 1.25 for dichotomous outcomes and 0.5*SD of control group at baseline for continuous outcomes). Where data is pooled in analyses, the study with the largest weight was used as the control group for default MID calculations. Where the 95% CI does not cross either MID threshold, the evidence is assessed as having 'no serious' risk of imprecision unless the effect estimate is derived on the basis of few events and a small study sample (that is, less than 300 events for dichotomous outcomes or total sample size less than 400 for continuous outcomes). In that case the results were downgraded one level for 'serious' imprecision to reflect uncertainty in the effect estimate

a) Downgraded 1 level due to ROB rating as 'some concerns' (see data extraction table)
b) Downgraded 2 levels - not possible to calculate imprecision from the information reported in the study and number of events is less than 300 (if a dichotomous outcome) or total sample size is less than 400 (if a continuous outcome).
c) Downgraded 2 levels as ROB rating as 'high' (see data extraction table)
d) Downgraded 1 level as number of events is less than 300 (if a dichotomous outcome) or total sample size is less than 400 (if a continuous outcome)
e) Downgraded 1 level as upper or lower CI crosses MID threshold
f) Downgraded 1 level - not possible to calculate imprecision from the information reported in the study

GRADE profile 3: Individual data: Behavioural and health outcomes for digital and mobile health interventions (change from baseline intervention vs other intervention), studies that could not be pooled

Name of study	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No. of participants	Effect	Quality of evidence for outcome	Importance of outcome
Diet										
Baseline vs. ≥ 6 months										
Alexander 2010 (no chronic conditions)	RCT	Serious[a]	N/A	No serious	Serious[b]	No	Arm 1: 611, arm 2: 599	Adjusted mean change in F&V servings per day, arm 1: 2.34 arm 2: 2.68, p value not reported	Low	N/A
Allen 2010 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	35	Between group MD, F&V servings per day, Smartphone/intensive counselling: -0.76 (-3.42 to 1.90) p=0.57	Very low	N/A
Ferrante 2018 (cancer)	RCT	Serious[a]	N/A	No serious	Serious[b]	No	20	Calories/day MD (SD) baseline to 6 months, intervention: -216.6 (606.1) Correlation between number of days logged food and calories/day (r, p value): -0.465, 0.060	Low	N/A
Physical activity in adults										
Baseline vs. ≥ 6 months										
Kolt 2016 (no chronic conditions)	RCT	Serious[a]	N/A	No serious	Web1.0/logbook- No serious Web2.0/logbook- No serious	No	504	Between group MD, MVPA min/day, Web 1.0/logbook: −0.1 (−6.2 to 6.1), Web 2.0/logbook: −1.0 (−6.3 to 4.4)	Moderate	N/A
Spittaels 2007 (no chronic conditions)	RCT	Serious[a]	N/A	No serious	Tailored advice+ email/standard advice - Serious[c] Tailored advice /standard advice - Serious[c]	No	257	Between group MD, Total PA min/wk, tailored advice+ email/standard advice: -6.0 (-131.27 to 119.27) p=0.92, tailored advice/standard advice: -44.0 (-156.15 to 68.15) p=0.45	Low	N/A
Allen 2010 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	35	Between group MD, ≥ moderate activity hrs/wk, smartphone/intensive counselling: 1.59 (-2.45 to 5.63) p=0.45	Very low	N/A
	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	Tailored print: 86, tailored	Moderate to vigorous PA at 6 mnths, min/wk, Median,	Very low	N/A

Marcus 2007 (overweight/obesity)							internet 81, standard internet 82	tailored print 90.0, tailored internet 90.0, standard internet 80.0		
Polgreen 2018 (diabetes)	RCT	Very serious[e]	N/A	No serious	Very serious[d]	No	Fitbit + reminders/fitbit only 92, Fitbit+ reminders + goalsetting/fitbit only 94	Regression analysis for step counts, fitbit+ reminders/fitbit only: -342.8 (-1,347.3 to 664.8), fitbit +reminders +goalsetting/fitbit only: -182.1 (-1,229.1 to 812.7)	Very low	N/A
Ferrante 2018 (cancer)	RCT	Serious[a]	N/A	No serious	Serious[b]	No	20	Steps/day MD (SD) baseline to 6 months, intervention: -107.07 (2184.94), control: -205.47 (2147.79); p = 0.860	Low	N/A
Kernot 2019 (pregnancy)	RCT	No serious	N/A	No serious	No serious	No	41	Self-reported walking min/wk mean (95% CI) intervention: baseline 171 (121, 221), 6 months 188 (156, 221); control: baseline 186 (127, 245), 6 months 192 (139, 245). Self-reported MVPA min/wk mean (95% CI) intervention: baseline 299 (202, 396), 6 months 375 (272, 478); control: baseline 336 (219, 453), 6 months 388 (265, 511).	High	N/A
BMI in adults										
Baseline vs. ≥ 6 months										
Allen 2010 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	35	Between group MD BMI change, smartphone/intensive counselling: 0.1 (-0.79 to 0.99) p=0.83	Very low	N/A
Tanaka 2010 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	51	BMI change MD, computer tailored programme/booklet: -0.3 (-0.88 to 0.28) p 0.31	Very low	N/A
Weight in adults										
Baseline vs. ≥ 6 months										
Allen 2010 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	35	Between group MD body w eight change, smartphone/intensive counselling: 0.7 (-1.88 to 3.28) p=0.60	Very low	N/A
	RCT	Very serious[e]	N/A	No serious	Very serious[c]	No	86	Between group MD body weight change (kg),	Very low	N/A

Carter 2013 (overweight/obesity)								smartphone/paper logbook: -1.7 (-9.10 to 5.70) p =0.65		
Tanaka 2010 (overweight/obesity)	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	51	Proportion of participants who lost at least 5% of the initial body weight at 7 months, computer tailored programme/booklet: (KTPG= 26.1%, CG=14.3%, p=0.32). MD in weight (kg), computer tailored programme/booklet: -0.8 (-2.47 to 0.87) p =0.35	Very low	N/A
Sedentary time in adults										
Baseline vs. ≥ 6 months										
Spittaels 2007 (no chronic conditions	RCT	Serious[a]	N/A	No serious	Very serious[d]	No	257	Between group MD, Sitting on weekday min/day: tailored advice+ email/standard advice: 12.0 (-34.16 to 58.16) p=0.62, tailored advice/standard advice: 23.0 (-19.75 to 65.75) p=0.30 Sitting on weekend day min/day: tailored advice+ email/standard advice: 6.0 (-32.23 to 44.23) p=0.76, tailored advice/standard advice: 10.0 (-30.17 to 50.17) p=0.63	Very low	N/A

CI confidence intervals
Imprecision - If the confidence interval crosses either the lower or upper MID threshold this indicates 'serious' risk of imprecision and downgraded 1 level. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate and downgraded 2 levels. Default MIDs were used where no established MID's for individual outcomes are found (0.75 and 1.25 for dichotomous outcomes and 0.5*SD of control group at baseline for continuous outcomes). Where data is pooled in analyses, the study with the largest weight was used as the control group for default MID calculations. Where the 95% CI does not cross either MID threshold, the evidence is assessed as having 'no serious' risk of imprecision unless the effect estimate is derived on the basis of few events and a small study sample (that is, less than 300 events for dichotomous outcomes or total sample size less than 400 for continuous outcomes). In that case the results were downgraded one level for 'serious' imprecision to reflect uncertainty in the effect estimate

A) Downgraded 1 level due to ROB rating as 'some concerns' (see data extraction table)
B) Downgraded 1 level - not possible to calculate imprecision from the information reported in the study
C) Downgraded 1 level as number of events is less than 300 (if a dichotomous outcome) or total sample size is less than 400 (if a continuous outcome)
D) Downgraded 2 levels - not possible to calculate imprecision from the information reported in the study and number of events is less than 300 (if a dichotomous outcome) or total sample size is less than 400 (if a continuous outcome).
E) Downgraded 2 levels as ROB rating as 'high' (see data extraction table)
F) Downgraded 1 level – 95% CI crosses lower MID.

Appendix H – Health economic evidence profiles

Study	Archer 2012			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Archer 2012 (US) **Type of analysis:** CEA conducted alongside an RCT with healthcare costs taken from the study participants. The outcome from the RCT was kg lost over 9 months. **Perspective:** Payer (US) **Time horizon:** 9 months **Discounting:** Not conducted	**Population:** Sedentary (i.e. 150 minutes/week of self-reported moderate-to-vigorous physical activity) overweight and obese men and women aged 18–65 years **Specific population group of interest:** overweight/obesity **Population – sociodemographic factors/cohort settings:** Total (n=197) Mean age: 46.9 ± 10.8 Female (%): 161 (81.7%) College degree (4 years): 77.2% BMI: 33±5.2 % body fat: 38.4±5.3 **INTERVENTION Description:** SenseWear armband (SWA) involved an	**Mean total cost per person (9-month period)** Standard care: $53.95 SWA: $182.57 **Currency & cost year:** US$; 2010 **Cost components incorporated:** SenseWear platform and health care costs (staff costs, materials, incentives, overhead)	**Kg lost per participant (9-month period)** Standard care: 0.90 SWA: 3.55	**Incremental analysis** SWA vs standard care: $48.54 per additional kg lost (£38.40 per additional kg lost) **Analysis of uncertainty** One way and two ways deterministic sensitivity analyses were conducted varying staff costs and efficacy over a 95% confidence interval (CI). The ICER did not vary substantially. For example, SWA had an ICER of $47.35 (95% CI $44.19 to $50.60) [£37.46 (95% CI £34.96 to £40.03)] and $49.72 (95% CI 46.39 to 53.12) [£39.33 (95% CI £36.70 to £42.02)] at 80% and 120% of staffing costs, respectively, when compared with standard care.

Study	Archer 2012			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	armband (motion and temperature sensor), a real-time wrist display and access to a Weight Management Solutions web account. The armband provided feedback on energy expenditure and steps per day. **Mode:** Wearable device and access to a web account **Intensity and duration:** The participants were encouraged to upload their armband information and record their dietary intakes and weight to the Weight Management website on a daily basis. The impact of the intervention was analysed for 9 months. **Tailoring**: No **Healthcare professional involvement:** None			

Study	Archer 2012			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	Behaviour change techniques used: Reward and threat; feedback and monitoring. **COMPARATOR 1** **Description:** Standard care: individuals received a weight-loss manual. The decision space included 2 other arms with ineligible interventions (data for these arms not extracted in full here): **COMPARATOR 2** **Description:** Group weight-loss (GWL) education. Individuals received 14 health-education sessions in groups (i.e., 12–16 participants) from a health facilitator over the first 4 months of the intervention. **COMPARATOR 3** **Description:** SWA+GWL			

Study	Archer 2012			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Data sources				
Health outcomes: Within trial analysis (Barry 2011; Shuger 2011) **Quality-of-life weights:** Not applicable **Cost sources:** Resource use were taken from the RCT and unit costs from national averages				
Comments				
Source of funding: The study was funded by an unrestricted research grant from BodyMedia, Inc **Limitations:** Short time horizon, high attrition rate in the RCT, particularly from the standard care group, where only 52% of the initial sample had complete data at end of follow-up. It should also be underlined that only few parameters were varied in the sensitivity analyses **Other:** The authors report average cost-effectiveness ratios rather than incremental cost-effectiveness ratios for some comparisons; only true incremental cost-effectiveness ratios are reported in this table.				
Overall applicability: Partially applicable **Overall quality:** Very serious limitations				
Abbreviations: BMI: body mass index; CEA: cost-effective analysis; CI: confidence interval; GWL: group weight-loss; RCT: randomised controlled trial; SWA: Sense Wear armband; US: United States				

Study	Hersey 2012			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Hersey 2012 (Netherlands) **Economic analysis:** CEA and CUA conducted alongside an RCT reporting % weight loss with healthcare costs taken from study participants. Tables of years of life lost due to obesity were used to estimate lifetime LYG and QALYs.	**Population:** Overweight and obese men and women aged 18–64 years (BMI: 25 to 50) **Specific population group of interest:** overweight/ obesity **Population – sociodemographic factors/cohort settings:**	**Total costs per person:** RCT1: $145 RCT2: $160 **Currency & cost year:** US$; 2007 **Cost components incorporated:** Personnel, interactive website maintenance/ server fees, printed materials, equipment,	**Weight loss (percentage) at 12 months:** RCT1: 4.1% RCT2: 3.9% **LYG** RCT1: 0.17 RCT2: 0.16 **QALY** RCT1: 0.16 RCT2: 0.15	**Incremental analysis** Incremental cost per % weight loss (kg) RCT2 is dominated by RCT1 Incremental cost per LYG/QALY: not calculated (unclear how estimates of LYG and QALY were derived) **Analysis of uncertainty** Not undertaken The authors concluded that differences in costs and % weight loss between RCT2 and RCT1

Study	Hersey 2012			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Perspective: Payer (US) **Time horizon:** 12 months for weight loss; 19 years for LYG and QALYs **Discounting:** 3% for costs and benefits	Total (n=1755) Mean age: 46.7 years Female: 74.0% Non-Hispanic white: 83.6% Mean BMI: 33.6 **INTERVENTION** **Description:** RCT2 BookHEALTH manual and an interactive version of eHEALTH website that provided tailored computerised feedback whenever participants submitted weekly assessments **Mode:** Internet (website) **Intensity and duration:** The interactive version of eHEALTH provided tailored computerised feedback whenever participants submitted weekly assessments. The intervention lasted 12 months. **Tailoring**: Yes	weight-loss medications, and administrative/ overhead programme		were relatively small and combined these arms when comparing with RCT3.

Study	Hersey 2012			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	Healthcare professional involvement: None **Behaviour change techniques used:** Feedback and monitoring, goals and planning, **COMPARATOR 1** **Description:** RCT1 Standard care: BookHEALTH manual and basic internet component of eHEALTH website The decision space included 1 other arm with an ineligible intervention (data for these arms not extracted in full here): **COMPARATOR 2** **Description:** RCT3 BookHEALTH manual, interactive version of eHEALTH website plus coaching support provided by trained health lifestyle coaches every 2			

Study	Hersey 2012			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
	weeks alternating between a telephone call (typically 15 to 20 minutes) and a personalised e-mail			
Data sources				
Health outcomes: Within trial analysis (Blair 1998, 2001; Carpenter 2004, 2005) **Quality-of-life weights:** Quality of life associated with obesity was assumed equal to 0.94 (using preference-based health-care related quality of life scores) (Sullivan and Ghushchyan, 2006). **Cost sources:** Costs were quantified retrospectively from the RCT, but actual amounts from invoices and timesheets were used to ensure the accuracy of estimates. Other unit costs were taken from standard US sources.				
Comments				
Source of funding: The research was supported by the Department of Defense TRICARE Management Activity Contract **Limitations:** The authors recognised limitations as the relatively short follow-up for weight loss (12 months), the self-selection in the trial and the high retention rate. In the economic analysis the issue of uncertainty was not investigated. **Other:** Unclear how LYG and QALYs were estimated and should be interpreted with caution. The authors report average cost-effectiveness ratios and incremental cost-effectiveness ratios; only true incremental cost-effectiveness ratios are reported in this table.				
Overall applicability: Partially applicable		**Overall quality:** Very serious limitations		
Abbreviations: CEA: cost-effective analysis; LYG: life years gained; QALY: quality-adjusted life-year; RCT: randomised controlled trial.				

Study	Krukowski, 2011			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Krukowski, 2011 (US) **Type of analysis:** CEA conducted alongside an RCT that measured change in weight at 6 months and	**Population:** Overweight and obese adults (BMI: 25 to 50) **Specific population group of interest:** overweight/ obesity	**Mean total cost per person:** Internet group: $372.56 In-person group: $706.45	**Weight loss at 6 months** Internet: 5.5±5.6kg In-person: 8.0±6.1kg **Change in BMI at 6 months (calculated**	**Incremental analysis** Incremental cost per LYG: In-person vs. internet: $7,177 (£5,562/LYG) If travel time costs removed from in-person group: $3,802 (£2,946)

Study	Krukowski, 2011			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
applied an algorithm to estimate excess years of life lost. Base case assumes weight loss at 6 months was lost indefinitely. **Perspective:** Payer (US) and participant **Time horizon:** Lifetime for LYG **Discounting:** 3% for future benefits	**Population – sociodemographic factors/cohort settings:** Total (n=318) Mean age: 46.3 years (internet group), 46.9 years (in-person group) Female: 93% BMI: 35.8 **INTERVENTION Description:** Behavioural weight control based on Internet: participants met weekly in small groups of 15 to 20 individuals in a secure online chat room and had access to an online database to help monitor calorie intake. The Web site also included educational resources, a bulletin board for group communication, weekly tips and recipes, a BMI calculator, and local physical activity events.	If travel time costs removed from in-person group: $547.93 **Currency & cost year:** US$; cost year not reported **Cost components incorporated:** Materials, personnel, fixed, and travel costs	**from weight and height)** Internet: -1.98 (-2.28 to -1.68) In-person: -2.8 (-3.15 to -2.46) **Change in years of life lost to obesity** Internet: -0.47 (-0.60 to -0.34) In-person: -0.13 (-0.30 to 0.04)	**Analysis of uncertainty** 95% CIs around ICERs were calculated. The incremental cost per LYG for the in-person vs internet group ranged from $3,055 (£2,367) to $60,291 (£46,720). A sensitivity analysis assumed all participants returned to their pre-intervention weight after 1 year but appropriate ICERs were not reported.

Study	Krukowski, 2011			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	Mode: Website and online chat **Intensity and duration:** Participants met weekly (online chat) for a duration of 6 months **Tailoring**: No **Healthcare professional involvement:** None **Behaviour change techniques used:** Feedback and monitoring; goals and planning; social support **COMPARATOR** **Description:** In-person weight loss intervention: group sessions that included 15 to 20 participants. Each week group received materials that covered the topic introduced that session. Participants			

Study	Krukowski, 2011			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
	received a paper journal for self-monitoring dietary intake and physical activity, and a commercially-available calorie and fat counting book.			
Data sources				
Health outcomes: Within trial analysis (Harvey-Berino 2010) with some cost data gathered retrospectively **Quality-of-life weights:** Not applicable **Cost sources:** Costs were quantified from the RCT, some prospectively and some retrospectively and included participant travel time costs for in-person arm.				
Comments				
Source of funding: This research was supported by an National Institutes of Health grant **Limitations:** Assumes weight change is comparable to differences between BMIs used in calculation of years of life lost, no attempt to quantify downstream medical costs or to estimate QALYs **Other:** The authors report average cost-effectiveness ratios for some results; only true incremental cost-effectiveness ratios are reported in this table.				
Overall applicability: Partially applicable **Overall quality:** Potentially serious limitations				
Abbreviations: BMI: body mass index; CEA: cost-effective analysis; ICER: incremental cost-effectiveness ratio; LYG: life years gained; RCT: randomised control trial.				

Study	Larsen, 2017			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Larsen, 2017 (US) **Type of analysis:** CEA conducted alongside an RCT that reported total minutes of moderate to vigorous physical activity (MVPA).	**Population:** Underactive women (engaging in less than 60 minutes per week of moderate- to vigorous-intensity physical activity)	**Cost per participant (12 months)** Internet-based physical activity intervention: $142 Website without physical activity: $76	**Increase in minutes of moderate to vigorous physical activity (MVPA) per person at 12 months:** Internet-based physical activity intervention:	**Incremental analysis** Incremental cost per minute increase in MVPA (Internet-based physical activity vs website without physical activity) Participant recall: $0.04 (£0.03) Accelerometer: $0.08 (£0.06)

Study	Larsen, 2017			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Perspective: Payer **Time horizon:** 12 months **Discounting:** Not conducted	**Population – sociodemographic factors/cohort settings:** Participants were women aged 18 to 65 years, self-identified as Spanish-speaking Latina (n=205) **INTERVENTION** **Description:** Internet-based physical activity intervention: participants completed monthly online surveys about physical activity, cognitive and behavioural strategies to change behaviour, self-efficacy, and other psycho-social constructs. Survey responses were used to generate individually tailored reports for each participant, with feedback on changes over time. Participants also received other materials.[a] **Mode:** Website and emails	**Currency & cost year:** US$; cost year not reported **Cost components incorporated:** Personnel time, materials (study binder, pedometer, DVDs), website maintenance, technical support and hosting but not website development costs; did not include costs exclusively associated with research activity	4033 (using 7-day recall); 1496 (using accelerometer) Website without physical activity: 2306 (using 7-day recall); 696 (using accelerometer)	**Analysis of uncertainty** Sensitivity analyses examined how changes in staffing costs and intervention effectiveness would influence cost-effectiveness. Based on accelerometer values, a 20% increase in staffing costs resulted in an ICER of $0.10 (£0.07) per minute increase in MVPA and a 20% decrease in staffing costs resulted in an ICER of $0.07 (£0.05) per minute increase in MVPA. A 20% increase in effectiveness resulted in an ICER of $0.07 (£0.05) per minute increase in MVPA and 20% decrease in effectiveness resulted in an ICER of $0.12 (£0.09) per minute increase in MVPA

Study	Larsen, 2017			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	Intensity and duration: Participants were encouraged to report daily steps on the website and to report monthly surveys about their physical activity. Duration of the intervention was 6 months. **Tailoring**: Yes **Healthcare professional involvement:** Initial on-site visit with trained staff for goal-setting, orientation to website and to receive pedometer. **Behaviour change techniques used:** Feedback and monitoring; goals and planning; social support **COMPARATOR** **Description:** Website without physical activity: this site included information on health topics other			

Study	Larsen, 2017			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
	than physical activity, including diet, stress reduction, and sleep.			
Data sources				
Health outcomes: Within trial analysis (Marcus 2015) with costs estimated prospectively **Quality-of-life weights:** Not applicable **Cost sources:** Staff time for training and delivering the intervention (i.e., salary, benefits, and overhead) and cost of website maintenance and materials based on actual costs incurred during the trial. Unit costs for staff were taken from standard published salaries at the University of California.				
Comments				
Source of funding: This work was supported by the National Cancer Institute, National Institutes of Health **Limitations:** The authors acknowledged some limitations such as the lack of inclusion of costs for updating the website. However, the main limitation of the analysis is related to the use of an outcome measure that does not allow conclusions to be drawn on the cost-effectiveness of the intervention. Also only a short-term analysis was conducted. **Other:** None				
Overall applicability: Partially applicable **Overall quality:** Very serious limitations				
Abbreviations: MVPA: moderate to vigorous physical activity; RCT: randomised controlled trial; US: United States.				
a) *Participants also received online physical activity manuals, a calendar for goal setting and logging daily minutes of activity and steps, a message board for interacting with other participants, an 'ask the expert' page, and a guide to local free and low-cost physical activity resources. Participants received regular emails with tip sheets on topics such as finding time to exercise, staying motivated.*				

Study	Leahey, 2014			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Leahey, 2014 (US) **Type of analysis:** CEA conducted alongside an RCT. The analysis was conducted	**Population:** Adults aged 18 to 70 years with a BMI >25.	**Mean cost per participant (3 months) (95% CI)** S alone: $36.24 ($35, $38) SI: $138.03 ($131, $145)	**Mean weight change (3 months) (percentage) (95% CI)** S: -0.9% (-1.7,-0.2) SI: -4.0% (-4.9,-3)	**Incremental analysis** 3-months: SI vs S: $33/kg weight loss (£23/kg weight loss) 12-months: SI vs S: $85/kg weight loss (£62/kg weight loss)

Study	Leahey, 2014			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
over a 12-month time horizon. The outcome measure was the reduction of weight at 3 and 12 months. **Perspective:** Societal **Time horizon:** 3 and 12 months **Discounting:** Not conducted	**Specific population group of interest:** overweight/obesity **Population – sociodemographic factors/cohort settings:** Total (n=230) Age (years): 46.2 ±1.2 (intervention); 46.5 ± 1.7 (control) Female: 84% BMI: 34.3±6.8kg/m^2 **INTERVENTION** **Description:** 3-month internet behavioural weight loss intervention added to a state-wide wellness campaign (SI). Internet intervention included 12 weekly, 10- to 15-minute multimedia lessons based on the Diabetes Prevention Program and a self-monitoring platform where participants tracked their daily weight, calorie, and activity information. This was added to the	**Currency & cost year:** US$; 2010 **Cost components incorporated:** Staff, material, SURI programme, transportation, participant time	**Mean weight change (12 months) (percentage) (95% CI)** S: -0.9 % (-2.5,1) SI: -2.1% (-3.5,-0.8)	**Analysis of uncertainty** Not conducted

Study	Leahey, 2014			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
	ShapeUp Rhode Island (SURI), a 3-month, state-wide programme. Participants joined in teams, entered the weight loss or physical activity division, or both, and competed with other teams on these domains. **Mode:** Website **Intensity and duration:** 10 to 15 minutes multimedia lessons over 12 weeks **Tailoring:** No **Healthcare professional involvement:** No direct involvement in the website **Behaviour change techniques used:** Feedback and monitoring; comparison of behaviour.			

Study	Leahey, 2014			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
	COMPARATOR 1 **Description:** SURI alone The decision space included 1 other arm with an ineligible intervention (data for these arms not extracted in full here): **COMPARATOR 2** **Description:** SI plus optional group sessions (SIG) led by masters-level staff with extensive training in behavioural weight loss.			
Data sources				
Health outcomes: Within trial analysis with costs estimated prospectively **Quality-of-life weights:** Not applicable **Cost sources:** All resources used were based on those incurred during the trial. Unit costs were based on national averages.				
Comments				
Source of funding: This study was supported by a grant from the National Institute of Diabetes and Digestive and Kidney Diseases **Limitations:** A relatively short time horizon and a lack of sensitivity analysis **Other:** None				
Overall applicability: Partially applicable **Overall quality:** Very serious limitations				
Abbreviations: CEA: cost-effective analysis; S: SURI programme; SI: SURI plus Internet; SIG: SURI plus internet group;				

Study	Padwal, 2017			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Padwal, 2017 (Canada) **Type of analysis:** CCA conducted alongside an RCT with change in weight as primary outcome. **Perspective:** Payer **Time horizon:** 9 months **Treatment effect duration:** Not relevant **Discounting:** Not conducted	**Population:** Patients with BMI levels ≥35 kg/m^2 who were newly wait-listed for adult (age >18 years) bariatric specialty care. **Specific population group of interest:** Overweight/ obesity **Population – sociodemographic factors/cohort settings:** Total (n=651) Age (years): 40.4 ± 9.8 Female: 83% BMI: 47.7 ± 7.0 Completed post-secondary school: 56.7% **INTERVENTION** **Description:** Self-management and educational web-based weight loss intervention (mean age 40.6 ± 10.1; female 81%): web-based programme to educate patients regarding	**Total costs per person:** Mean total cost per person: Web-based: Can$5.54 Control: Can$1.33 **Currency & cost year:** Can$; 2013 **Cost components incorporated:** Dietician's time to develop web-based module, web hosting and technology support costs, printing and mailing educational materials.	**Mean weight reduction (kg at 9 months)** Web-based: 2.8 ± 6.7 Control: 2.9 ± 8.8 **BMI change (at 9 months)** Web-based: -1.0 ± 2.4 Control: -1.0 ± 3.0 **EQ-5D score change (at 9 months)** Web-based: 0.02 ± 0.04 Control: 0.02 ± 0.05	**Incremental analysis** **EQ-5D score:** Web-based intervention is dominated by the control arm. **Weight loss (kg):** Web-based intervention is dominated by the control arm. **BMI change:** Web-based intervention is dominated by the control arm. **Analysis of uncertainty** Not undertaken

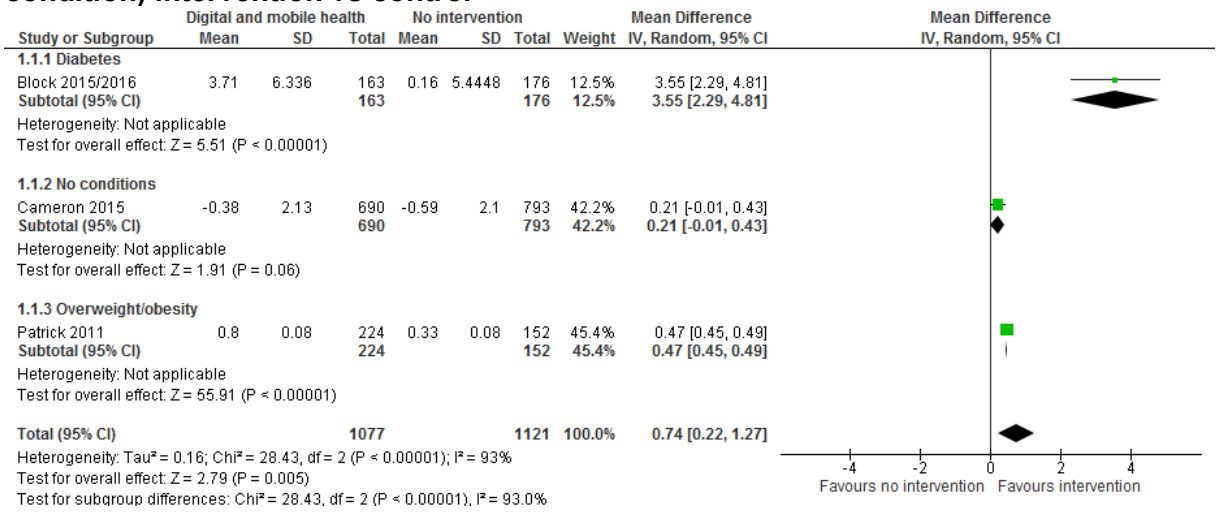
Study	Padwal, 2017			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	proper diet and exercise; improve their weight management skills by enhancing self-management and self-efficacy; and help them identify/ overcome barriers to success. **Mode:** Website **Intensity and duration:** 13 modules were available to the subject on a single online platform and subjects were asked to read all 13 modules over a 3-month period **Tailoring:** No **Healthcare professional involvement:** None **Behaviour change techniques used:** Feedback and monitoring **COMPARATOR 1**			

Study	Padwal, 2017			
Study details	Population & interventions	Costs	Health outcomes	Cost-effectiveness
	Description: Control group (mean age: 40.4 ± 9.3, female 86%): one-time provision of printed educational materials for weight loss The decision space included 1 other arm with an ineligible intervention (data for these arms not extracted in full here): **COMPARATOR 2** **Description:** In-person behavioural weight loss intervention (mean age 40.5 ± 9.9, female 81%): 13 sessions delivered in a group format by a multidisciplinary (each session was approximately 2.5 hours long). The programme was designed to educate patients regarding proper diet and exercise; improve their weight management skills by enhancing			

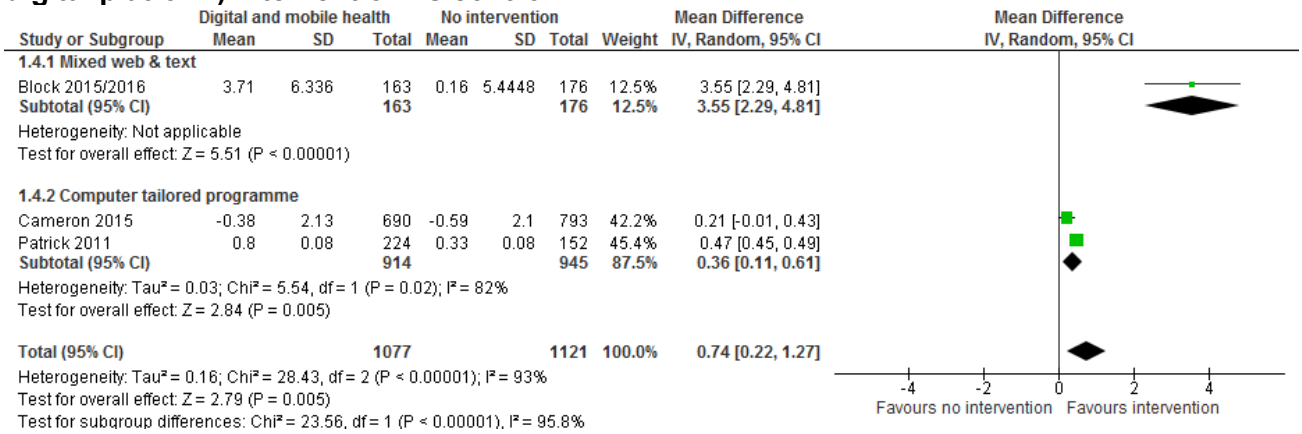
Study	Padwal, 2017			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
	self-management and self-efficacy; and help them to identify/overcome barriers to success.			
Data sources				
Health outcomes: Within trial analysis with costs estimated prospectively. **Quality-of-life weights:** EQ-5D scores were collected as secondary endpoints. **Cost sources:** Resource use data were taken from the RCT and unit costs from national sources.				
Comments				
Source of funding: The study was funded by the Canadian Institute for Health Research **Limitations:** The authors acknowledged some limitations related to the RCT. 30% of participants withdrew. It is possible that patients in the web-based group might have logged in but not read all the modules. There is an issue of external validity. In terms of cost-effectiveness analysis, there are some issues related to the lack of incremental analysis and sensitivity analysis. **Other:** None				
Overall applicability: Partially applicable **Overall quality:** Very serious limitations				
Abbreviations: BMI: body mass index; CCA: cost-consequences analysis				

Appendix I – Forest plots

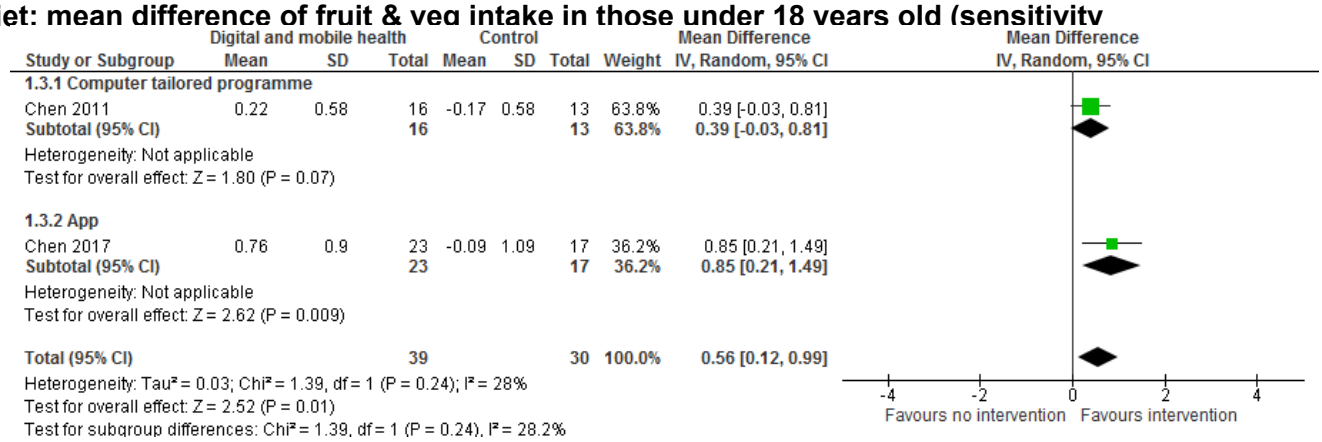
Diet: mean difference of fruit & veg intake (servings/day) in adults (sensitivity analysis by condition) intervention vs control



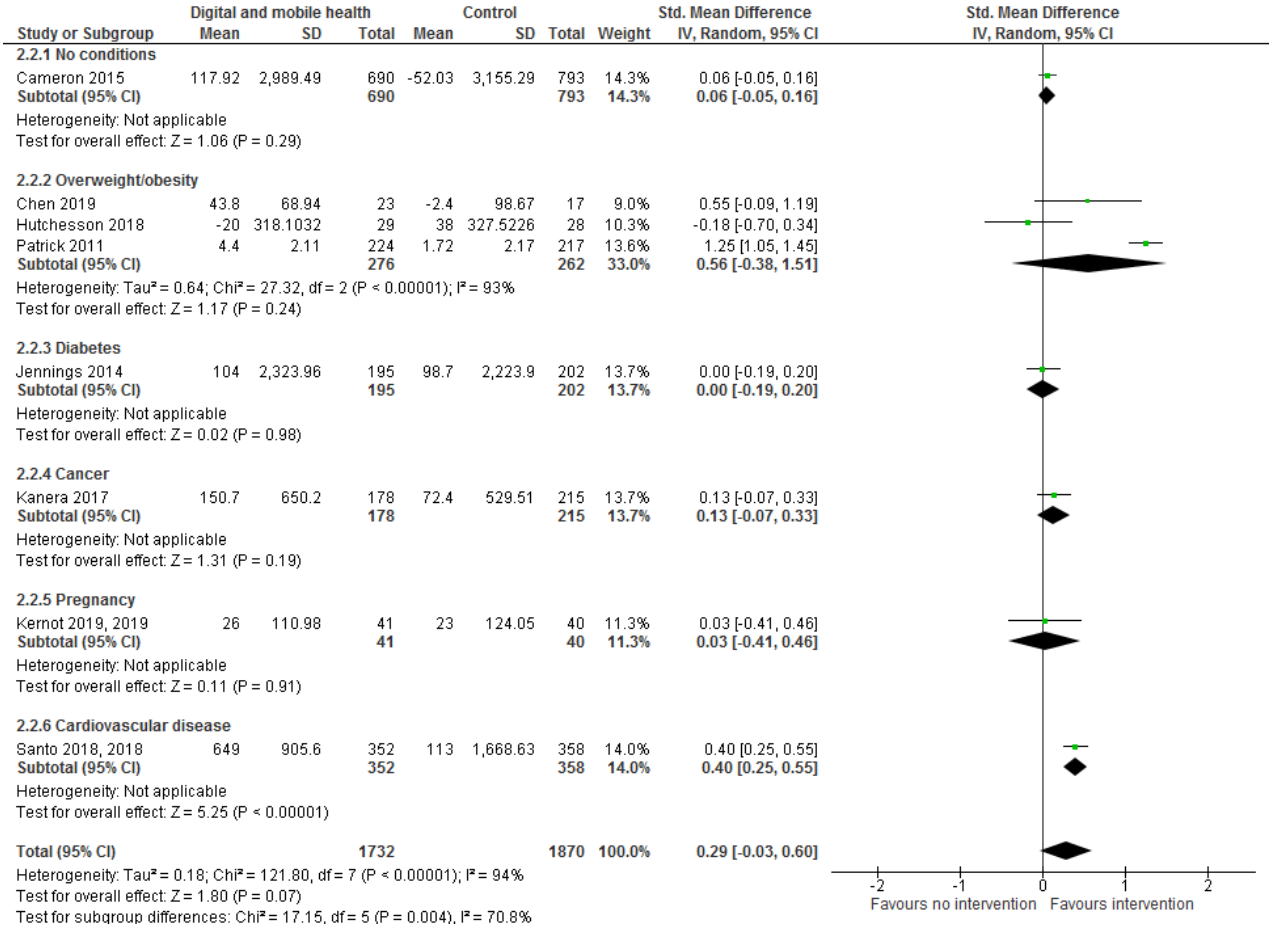
Diet: mean difference of fruit & veg intake (servings/day) in adults (sensitivity analysis by digital platform) intervention vs control



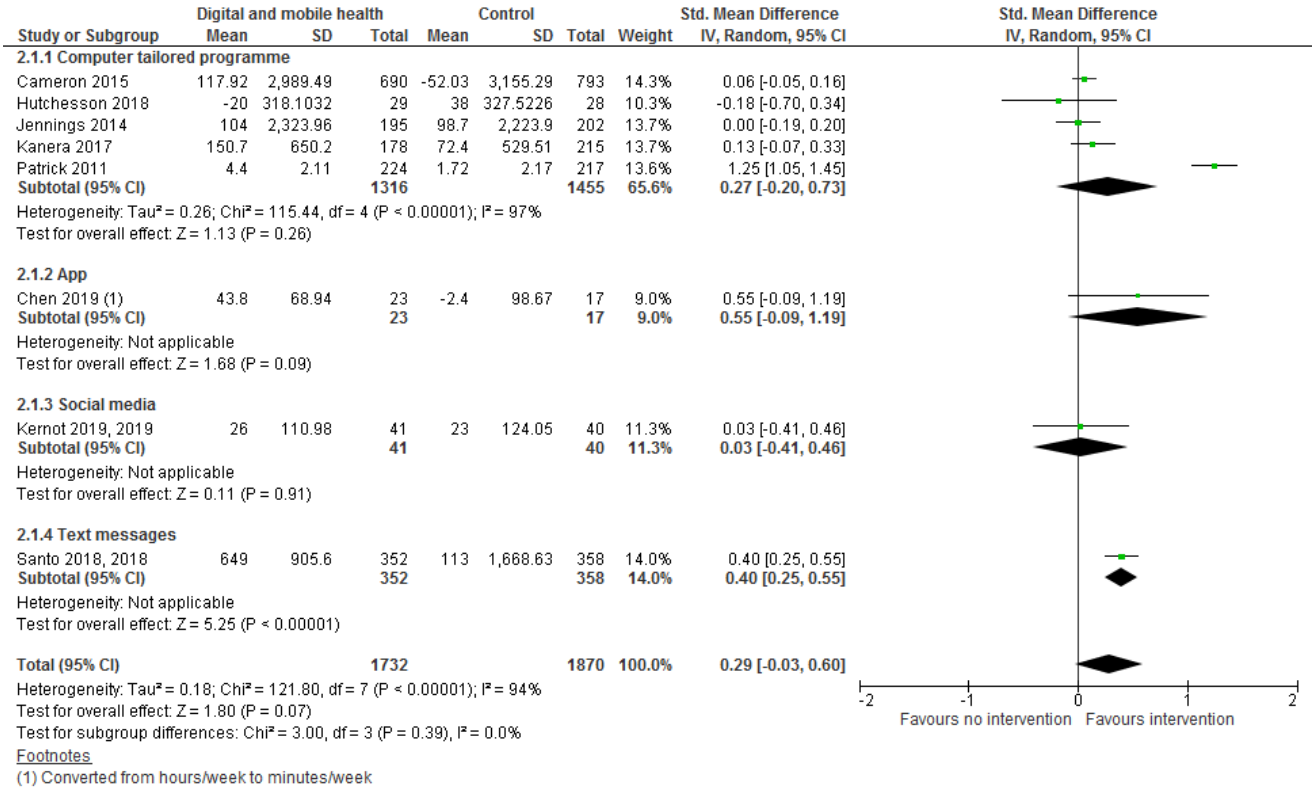
Diet: mean difference of fruit & veg intake in those under 18 years old (sensitivity



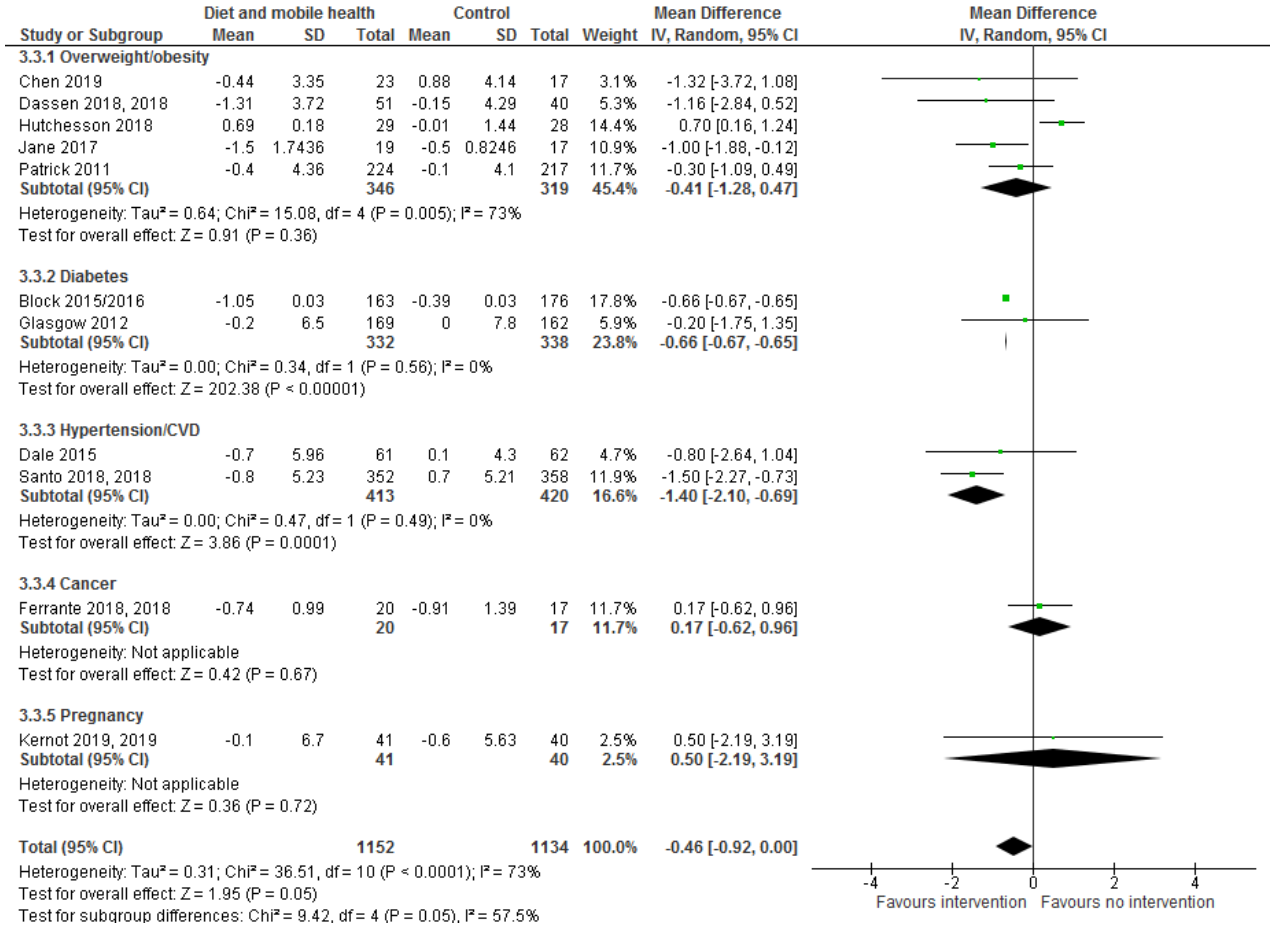
Physical activity: standardised mean difference minutes per week in adults (subgroup analysis by population) intervention vs control (measured by various scales)



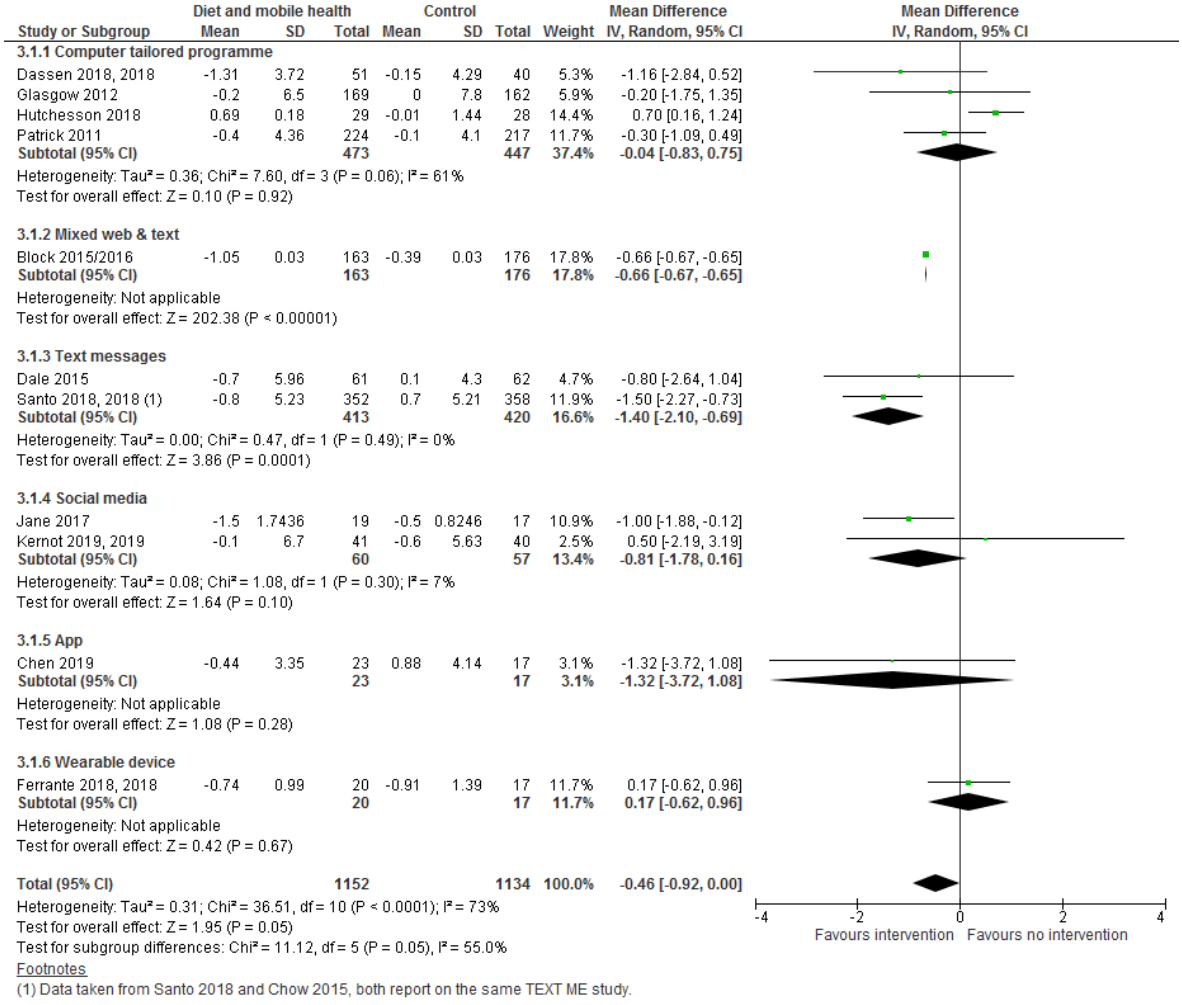
Physical activity: standardised mean difference minutes per week in adults (subgroup analysis by digital platform) intervention vs control (measured by various scales)



Health outcomes: mean difference in BMI change in adults (subgroup analysis by population) intervention vs control



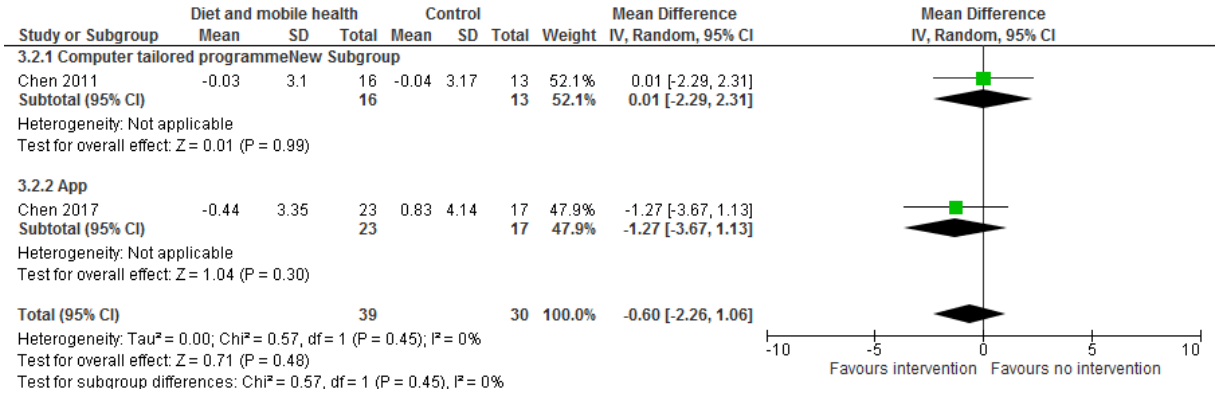
Health outcomes: mean difference in BMI change in adults (subgroup analysis by digital platform) intervention vs control



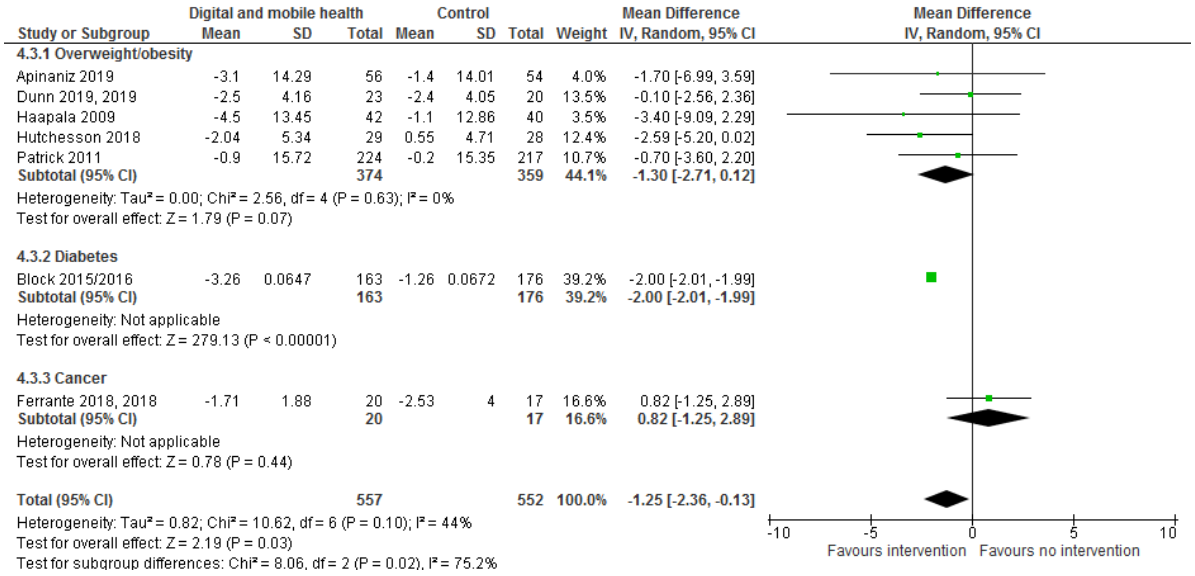
Footnotes

(1) Data taken from Santo 2018 and Chow 2015, both report on the same TEXT ME study.

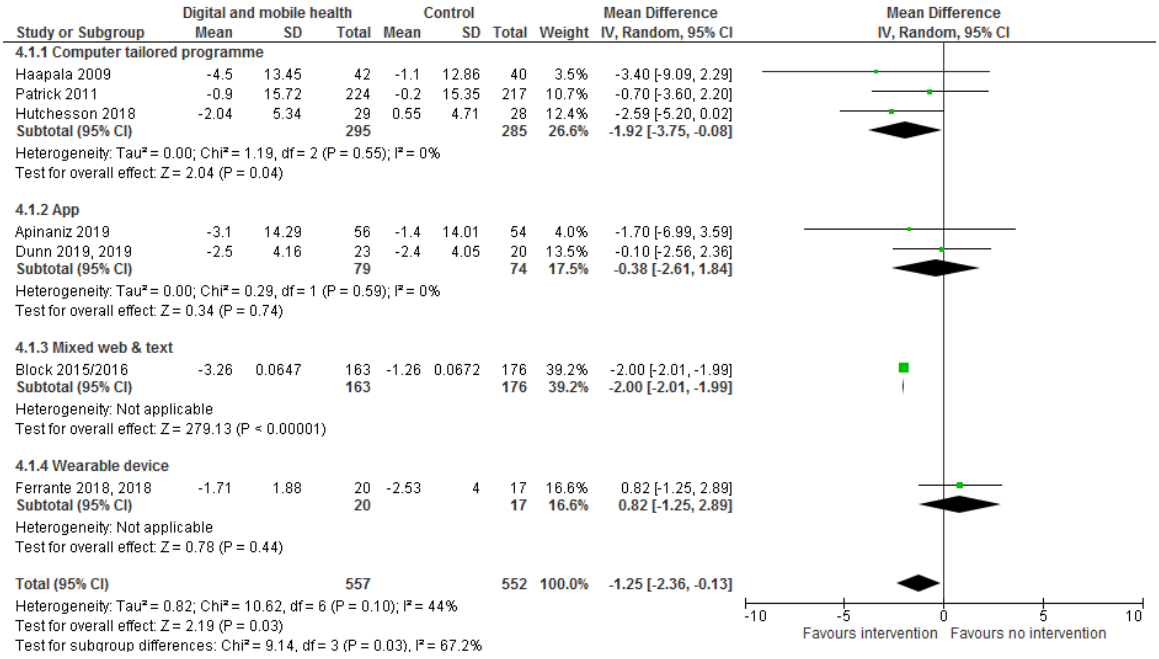
Health outcomes: mean difference BMI change in those under 18 years (sensitivity analysis by digital platform) intervention vs control



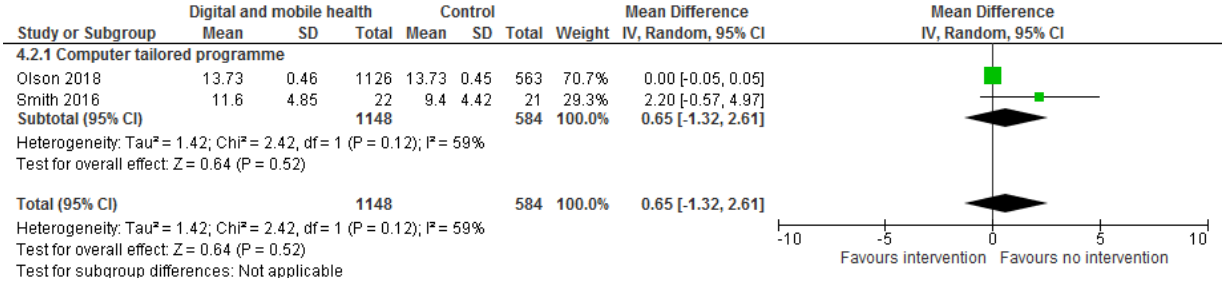
Health outcomes: mean difference weight change (kg) in adults (sensitivity analysis by population) intervention vs control



Health outcomes: mean difference weight change (kg) in adults (subgroup analysis by digital platform) intervention vs control



Health outcomes: gestational weight gain (kg) in pregnant women (subgroup analysis by digital platform) intervention vs control



Appendix J – Excluded studies

Public health studies

Please see appendix J for the list of excluded studies (attached separately)

Economic studies

Full reference	Reason for exclusion
Aalbers T, Baars MAE, Rikkert MGMO. Characteristics of effective Internet-mediated interventions to change lifestyle in people aged 50 and older: a systematic review. Ageing Res Rev. 2011;10(4):487-97.	Ineligible outcomes
Abrantes AM, Blevins CE, Battle CL, Read JP, Gordon AL, Stein MD. Developing a Fitbit-supported lifestyle physical activity intervention for depressed alcohol dependent women. J Subst Abuse Treat. 2017;80:88-97.	Ineligible outcomes
Adams J. Worth doing badly? Sexual health promotion in primary care. Br J Gen Pract. 2003;53(497):981	Ineligible study design
Aittasalo M, Rinne M, Pasanen M, Kukkonen-Harjula K, Vasankari T. Promoting walking among office employees - evaluation of a randomized controlled intervention with pedometers and e-mail messages. BMC Public Health. 2012;12(403):1-11.	Limited ability to inform the committee about the factors of interest
Alfonso J, Hall TV, Dunn ME. Feedback-based alcohol interventions for mandated students: an effectiveness study of three modalities. Clin Psychol Psychother. 2013;20(5):411-23.	Ineligible outcomes
Alouki K, Delisle H, Bermudez-Tamayo C, Johri M. Lifestyle interventions to prevent type 2 diabetes: a systematic review of economic evaluation studies. J Diabetes Res. 2016;2016:E2159890.	Systematic review
Aminde LN, Takah NF, Zapata-Diomedi B, Veerman JL. Primary and secondary prevention interventions for cardiovascular disease in low-income and middle-income countries: a systematic review of economic evaluations. Cost Eff Resour Alloc. 2018;16(22):1-34.	Systematic review
Angus C, Latimer N, Preston L, Li J, Purshouse R. What are the implications for policy makers? A systematic review of the cost-effectiveness of screening and brief interventions for alcohol misuse in primary care. Frontiers in Psychiatry. 2014;5(Sep):Article 114.	Ineligible intervention
Angus C, Li J, Romero-Rodriguez E, Anderson P, Parrott S, Brennan A. Cost-effectiveness of strategies to improve delivery of brief interventions for heavy drinking in primary care: results from the ODHIN trial. Eur J Public Health. 2018;29(2):219-25.	Ineligible intervention

Full reference	Reason for exclusion
Bailey J, Mann S, Wayal S, Hunter R, Free C, Abraham C, et al. Sexual health promotion for young people delivered via digital media: a scoping review. NIHR Journals Library 2015	Ineligible study design
Bailey JV, Webster R, Hunter R, Griffin M, Freemantle N, Rait G, et al. The men's safer sex project: intervention development and feasibility randomized controlled trial of an interactive digital intervention to increase condom use in men. Health Technol Assess. 2016;20(91):1-152.	Ineligible population
Bhardwaj NN, Wodajo B, Gochipathala K, Paul DP, 3rd, Coustasse A. Can mHealth revolutionize the way we manage adult obesity? Perspect Health Inf Manag. 2017;14:1A.	Systematic review
Blake H. Text messaging interventions increase adherence to antiretroviral therapy and smoking cessation. Evid Based Med. 2014;19(1):35-36.	Ineligible outcomes
Blankers M, Nabitz U, Smit F, Koeter MW, Schippers GM. Economic evaluation of internet-based interventions for harmful alcohol use alongside a pragmatic randomized controlled trial. J Med Internet Res. 2012;14(5):E134.	Ineligible population
Block G, Sternfeld B, Block CH, Block TJ, Norris J, Hopkins D, et al. Development of alive! (A lifestyle intervention via email), and its effect on health-related quality of life, presenteeism, and other behavioral outcomes: randomized controlled trial. J Med Internet Res. 2008;10(4):e43.	Ineligible outcomes
Brown J. Internet-based intervention for smoking cessation (StopAdvisor) in people with low and high socioeconomic status: a randomised controlled trial. Lancet Respir Med. 2014;2(12):997-1006.	Ineligible study design
Bull S, Devine S, Schmiege SJ, Pickard L, Campbell J, Shlay JC. Text messaging, teen outreach program, and sexual health behavior: a cluster randomized trial. Am J Public Health. 2016;106(S1):S117-24.	Ineligible intervention
Burford O, Jiwa M, Carter O, Parsons R, Hendrie D. Internet-based photoaging within Australian pharmacies to promote smoking cessation: randomized controlled trial. J Med Internet Res. 2013;15(3):e64.	Ineligible population
Burgos JL, Patterson TL, Graff-Zivin JS, Kahn JG, Rangel MG, Lozada MR, et al. Cost-effectiveness of combined sexual and injection risk reduction interventions among female sex workers who inject drugs in two very distinct Mexican border cities. PLoS ONE. 2016;11(2):E0147719.	Ineligible intervention
Burn E, Marshall AL, Miller YD, Barnett AG, Fjeldsoe BS, Graves N. The cost-effectiveness of the MobileMums intervention to increase physical activity among mothers with young children: a Markov model informed by a randomised controlled trial. BMJ Open. 2015;5(4):E007226.	Ineligible population
Burn E, Nghiem S, Jan S, Redfern J, Rodgers A, Thiagalingam A, et al. Cost-effectiveness of a text message programme for the prevention of recurrent cardiovascular events. Heart. 2017;103(12):923-30.	Ineligible outcomes

Full reference	Reason for exclusion
Calhoun PS, Datta S, Olsen M, Smith VA, Moore SD, Hair LP, et al. Comparative effectiveness of an internet-based smoking cessation intervention versus clinic-based specialty care for veterans. J Subst Abuse Treat. 2016;69:19-27.	Ineligible population
Carr SM, Lhussier M, Forster N, Geddes L, Deane K, Pennington M, et al. An evidence synthesis of qualitative and quantitative research on component intervention techniques, effectiveness, cost-effectiveness, equity and acceptability of different versions of health-related lifestyle advisor role in improving health. Health Technol Assess. 2011;15(9)	Ineligible outcomes
Cecchini M, Sassi F, Lauer JA, Lee YY, Guajardo-Barron V, Chisholm D. Tackling of unhealthy diets, physical inactivity, and obesity: health effects and cost-effectiveness. Lancet. 2010;376(9754):1775-84.	Ineligible intervention
Chen F, Su W, Becker SH, Payne M, Sweet CMC, Peters AL, et al. Clinical and economic impact of a digital, remotely-delivered intensive behavioral counseling program on medicare beneficiariesat risk for diabetes and cardiovascular disease. PLoS ONE. 2016;11(10):E0163627.	Ineligible intervention
Chen YF, Madan J, Welton N, Yahaya I, Aveyard P, Bauld L, et al. Effectiveness and cost-effectiveness of computer and other electronic aids for smoking cessation: a systematic review and network meta-analysis. Health Technol Assess. 2012;16(38):1-205.	Ineligible population
Cheng Q, Church J, Haas M, Goodall S, Sangster J, Furber S. Cost-effectiveness of a population-based lifestyle intervention to promote healthy weight and physical activity in non-attenders of cardiac rehabilitation. Heart Lung Circ. 2016;25(3):265-74.	Ineligible intervention
Cheung KL, Wijnen B, de Vries H. A review of the theoretical basis, effects, and cost effectiveness of online smoking cessation interventions in the netherlands: a mixed-methods approach. J Med Internet Res. 2017;19(6):E230.	Ineligible population
Cheung K-L, Wijnen BFM, Hiligsmann M, Coyle K, Coyle D, Pokhrel S, et al. Is it cost-effective to provide internet-based interventions to complement the current provision of smoking cessation services in the Netherlands? An analysis based on the EQUIPTMOD. Addiction (Abingdon, England). 2018;113 Suppl 1:87-95	Ineligible population
Clayforth C, Pettigrew S, Mooney K, Lansdorp-Vogelaar I, Rosenberg M, Slevin T. A cost-effectiveness analysis of online, radio and print tobacco control advertisements targeting 25-39 year-old males. Aust N Z J Public Health. 2014;38(3):270-74.	Ineligible intervention
Cleghorn C, Wilson N, Nair N, Kvizhinadze G, Nghiem N, McLeod M, et al. Health Benefits and Cost-Effectiveness From Promoting Smartphone Apps for Weight Loss: Multistate Life Table Modeling. JMIR mHealth and uHealth 2019;7(1): e11118	Ineligible intervention

Full reference	Reason for exclusion
Cobiac LJ, Vos T, Barendregt JJ. Cost-effectiveness of interventions to promote physical activity: a modelling study. PLos Med. 2009;6(7):1-11.	Ineligible intervention
Cohen DA, Wu SY, Farley TA. Comparing the cost-effectiveness of HIV prevention interventions. J Acquir Immune Defic Syndr. 2004;37(3):1404-14.	Ineligible intervention
Comello, Maria Leonora G and Porter, Jeannette H. Concept Test of a Smoking Cessation Smart Case. Telemed J E Health 2018:4	Ineligible intervention
Cooper K, Shepherd J, Picot J, Jones J, Kavanagh J, Harden A, et al. An economic model of school-based behavioral interventions to prevent sexually transmitted infections. Int J Technol Assess Health Care. 2012;28(4):407-14.	Ineligible intervention
Crombie IK, Falconer DW, Irvine L, Williams B, Ricketts IW, Humphris G, et al. Reducing alcohol-related harm in disadvantaged men: development and feasibility assessment of a brief intervention delivered by mobile telephone. NIHR Journals Library 2013	Ineligible study design
Crombie IK, Irvine L, Williams B, Sniehotta FF, Petrie DJ, Jones C, et al. Text message intervention to reduce frequency of binge drinking among disadvantaged men: the TRAM RCT. Public Health Research. 2018; 6(6): Available from: https://dx.doi.org/10.3310/phr06060	Ineligible population
Daley A, Jolly K, Madigan C, Griffin R, Roalfe A, Lewis A, et al. A brief behavioural intervention to promote regular self-weighing to prevent weight regain after weight loss: a RCT. NIHR Journals Library 2019	Ineligible intervention
Daly AT, Deshmukh AA, Vidrine DJ, Prokhorov AV, Frank SG, Tahay PD, et al. Cost-effectiveness analysis of smoking cessation interventions using cell phones in a low-income population. Tob Control. 2019;28(1):88-94.	Ineligible population
Dandona L, Kumar SG, Kumar GA, Dandona R. Cost-effectiveness of HIV prevention interventions in Andhra Pradesh state of India. BMC Health Serv Res. 2010;10(117):1-8.	Ineligible intervention
Devi R, Singh SJ, Powell J, Fulton EA, Igbinedion E, Rees K. Internet-based interventions for the secondary prevention of coronary heart disease. Cochrane Database Syst Rev. 2015;12:CD009386.	Ineligible outcomes
Dobbie F, Hiscock R, Leonardi-Bee J, Murray S, Shahab L, Aveyard P, et al. Evaluating long-term outcomes of NHS stop smoking services (ELONS): a prospective cohort study. Health Technol Assess. 2014;18(35):1-424.	Ineligible intervention
Donker T, Blankers M, Hedman E, Ljotsson B, Petrie K, Christensen H. Economic evaluations of internet interventions for mental health: a systematic review. Psychol Med. 2015;45(16):3357-76.	Ineligible outcomes
Drost RM, Paulus AT, Jander AF, Mercken L, de Vries H, Ruwaard D, et al. A web-based computer-tailored alcohol prevention program for adolescents: cost-effectiveness and intersectoral costs and benefits. J Med Internet Res. 2016;18(4):E93.	Ineligible population

Full reference	Reason for exclusion
Ekpu VU, Brown AK. The economic impact of smoking and of reducing smoking prevalence: review of evidence. Tobacco Use Insights. 2015;8:1-35.	Systematic review
Emery JL, Coleman T, Sutton S, Cooper S, Leonardi-Bee J, Jones M, et al. Uptake of tailored text message smoking cessation support in pregnancy when advertised on the internet (MiQuit): observational study. J Med Internet Res. 2018;20(4):E146.	Ineligible study design
Emmons KM, Puleo E, Greaney ML, Gillman MW, Bennett GG, Haines J, et al. A randomized comparative effectiveness study of Healthy Directions 2: a multiple risk behavior intervention for primary care. Prev Med. 2014;64:96-102.	Ineligible intervention
Estabrooks PA, Wilson KE, McGuire TJ, Harden SM, Ramalingam NP, Schoepke L, et al. A quasi-experiment to assess the impact of a scalable, community-based weight loss program: combining reach, effectiveness, and cost. J Gen Intern Med. 2017;32(Suppl 1):24-31.	Limited ability to inform the committee about the factors of interest
Fischer HH, Durfee MJ, Raghunath SG, Ritchie ND. Short Message Service Text Message Support for Weight Loss in Patients With Prediabetes: Pragmatic Trial. JMIR Diabetes. 2019;4(2):e12985.	Ineligible study design
Fletcher A, Willmott M, Langford R, White J, Poole R, Brown R, et al. Pilot trial and process evaluation of a multilevel smoking prevention intervention in further education settings. NIHR Journals Library 2017	Ineligible study design
Folse SB, Falzon L, Trudeau KJ, Sciamanna CN, Schwartz JE, Davidson KW. Computer-based interventions for weight loss or weight maintenance in overweight or obese people. Cochrane Database Syst Rev. 2009(1):CD007675.	Ineligible study design
Forrest JI, Wiens M, Kanters S, Nsanzimana S, Lester RT, Mills EJ. Mobile health applications for HIV prevention and care in Africa. Curr Opin HIV AIDS. 2015;10(6):464-71.	Ineligible study design
Galarraga O, Colchero MA, Wamai RG, Bertozzi SM. HIV prevention cost-effectiveness: a systematic review. BMC Public Health. 2009;9(suppl 1):S5.	Ineligible intervention
Gallagher R, Neubeck L. How health technology helps promote cardiovascular health outcomes. Med J Aust. 2016;205(3):107-08.	Ineligible study design
GC V, Wilson EC, Suhrcke M, Hardeman W, Sutton S. Are brief interventions to increase physical activity cost-effective? A systematic review. Br J Sports Med. 2016;50(7):408-17.	Systematic review
Gillett M, Royle P, Snaith A, Scotland G, Poobalan A, Imamura M, et al. Non-pharmacological interventions to reduce the risk of diabetes in people with impaired glucose regulation: a systematic review and economic evaluation. Health Technol Assess. 2012;16(33):1-236.	Ineligible intervention
Godfrey C. Cost effectiveness of treatment for alcohol problems: findings of the randomised UK alcohol treatment trial (UKATT). BMJ. 2005;331(7516):544-48.	Ineligible intervention

Full reference	Reason for exclusion
Golsteijn RH, Peels DA, Evers SM, Bolman C, Mudde AN, de Vries H, et al. Cost-effectiveness and cost-utility of a web-based or print-delivered tailored intervention to promote physical activity among adults aged over fifty: an economic evaluation of the Active Plus intervention. Int J Behav Nutr Phys Act. 2014;11:122.	Ineligible population
Goode AD, Lawler SP, Brakenridge CL, Reeves MM, Eakin EG. Telephone, print, and web-based interventions for physical activity, diet, and weight control among cancer survivors: a systematic review. J Cancer Surviv. 2015;9(4):660-82.	Ineligible outcomes
Gozzoli V, Palmer AJ, Brandt A, Spinas GA. Economic and clinical impact of alternative disease management strategies for secondary prevention in type 2 diabetes in the Swiss setting. Swiss Med Wkly. 2001;131(21-22):303-10.	Ineligible intervention
Graham AL, Chang Y, Fang Y, Cobb NK, Tinkelman DS, Niaura RS, et al. Cost-effectiveness of internet and telephone treatment for smoking cessation: an economic evaluation of The iQUITT Study. Tob Control. 2013;22(6):e11-e11.	Ineligible population
Guerriero C, Cairns J, Roberts I, Rodgers A, Whittaker R, Free C. The cost-effectiveness of smoking cessation support delivered by mobile phone text messaging: txt2stop. Eur J Health Econ. 2013;14(5):789-97.	Ineligible population
Harris J, Felix L, Miners A, Murray E, Michie S, Fergusn E, et al. Adaptive e-learning to improve dietary behaviour: a systematic review and cost-effectiveness analysis. Health Technol Assess. 2011;15(37):1-160.	Limited ability to inform the committee about the factors of interest
Harris T, Kerry S, Victor C, Iliffe S, Ussher M, Fox-Rushby J, et al. A pedometer-based walking intervention in 45- to 75-year-olds, with and without practice nurse support: the PACE-UP three-arm cluster RCT. Health Technol Assess. 2018;22(37):1-274	Ineligible intervention
Hawkins J, Charles JM, Edwards M, Hallingberg B, McConnon L, Edwards RT, et al. Acceptability and Feasibility of Implementing Accelorometry-Based Activity Monitors and a Linked Web Portal in an Exercise Referral Scheme: Feasibility Randomized Controlled Trial. J Med Internet Res 2019;21(3):e12374	Ineligible intervention
Henderson JA, Chubak J, O'Connell J, Ramos MC, Jensen J, Jobe JB, et al. Design of a randomized controlled trial of a web-based intervention to reduce cardiovascular disease risk factors among remote reservation-dwelling American Indian adults with type 2 diabetes. J Prim Prev. 2012;33(4):209-22.	Ineligible study design
Hollingworth W, Hawkins J, Lawlor DA, Brown M, Marsh T, Kipping RR. Economic evaluation of lifestyle interventions to treat overweight or obesity in children. Int J Obes. 2012;36(4):559-66.	Ineligible intervention
Holmen H, Torbjornsen A, Wahl AK, Jenum AK, Smastuen MC, Arsand E, et al. A mobile health intervention for self-management and lifestyle change for persons with type 2 diabetes, part 2: one-year results from the Norwegian	Ineligible study design

Full reference	Reason for exclusion
randomized controlled trial renewing health. Diabetes Technol Ther. 2016;18(Suppl 1):S58-59.	
Holtz B, Krein SL, Bentley DR, Hughes ME, Giardino ND, Richardson CR. Comparison of veteran experiences of low-cost, home-based diet and exercise interventions. J Rehabil Res Dev. 2014;51(1):149-60.	Ineligible outcomes
Hunter R, Wallace P, Struzzo P, Vedova RD, Scafuri F, Tersar C, et al. Randomised controlled non-inferiority trial of primary care-based facilitated access to an alcohol reduction website: cost-effectiveness analysis. BMJ Open. 2017;7(11):E014577.	Ineligible population
Iribarren SJ, Cato K, Falzon L, Stone PW. What is the economic evidence for mHealth? A systematic review of economic evaluations of mHealth solutions. PLoS ONE. 2017;12(2):E0170581.	Systematic review
Jacobs-van der Bruggen MA, Bos G, Bemelmans WJ, Hoogenveen RT, Vijgen SM, Baan CA. Lifestyle interventions are cost-effective in people with different levels of diabetes risk: results from a modeling study. Diabetes Care. 2007;30(1):128-34.	Ineligible intervention
Jacobs-van der Bruggen MA, van Baal PH, Hoogenveen RT, Feenstra TL, Briggs AH, Lawson K, et al. Cost-effectiveness of lifestyle modification in diabetic patients. Diabetes Care. 2009;32(8):1453-58.	Ineligible intervention
Jones M, Smith M, Lewis S, Parrott S, Coleman T. A dynamic, modifiable model for estimating cost-effectiveness of smoking cessation interventions in pregnancy: application to an RCT of self-help delivered by text message. Addiction (Abingdon, England). 2019;114(2):353-65.	Ineligible population
Joo N-S, Park Y-W, Park K-H, Kim C-W, Kim B-T. Cost-effectiveness of a community-based obesity control programme. J Telemed Telecare. 2010;16(2):63-7.	Limited ability to inform the committee about the factors of interest
Kachur R, Hall W, Coor A, Kinsey J, Collins D, Strona FV. The use of technology for sexually transmitted disease partner services in the united states: a structured review. Sex Transm Dis. 2018;45(11):707-12.	Ineligible outcomes
Kaner EF, Beyer FR, Garnett C, Crane D, Brown J, Muirhead C, et al. Personalised digital interventions for reducing hazardous and harmful alcohol consumption in community-dwelling populations. Cochrane Database Syst Rev. 2017;9:CD011479.	Ineligible outcomes
Keyserling TC, Sheridan SL, Draeger LB, Finkelstein EA, Gizlice Z, Kruger E, et al. A Comparison of live counseling with a web-based lifestyle and medication intervention to reduce coronary heart disease risk: a randomized clinical trial.	Ineligible intervention

Full reference	Reason for exclusion
Khan N, Marvel FA, Wang J, Martin SS. Digital health technologies to promote lifestyle change and adherence. Curr Treat Options Cardiovasc Med. 2017;19(8):60.	Ineligible outcomes
King C, Llewellyn C, Shahmanesh M, Abraham C, Bailey J, Burns F, et al. Sexual risk reduction interventions for patients attending sexual health clinics: a mixed-methods feasibility study. Health Technol Assess. 2019;23(12):1-122	Ineligible study design
Korber K. Quality assessment of economic evaluations of health promotion programs for children and adolescents-a systematic review using the example of physical activity. Health Econ Rev. 2015;5(1):1-14.	Ineligible intervention
Krishna S, Boren SA, Balas EA. Healthcare via cell phones: a systematic review. Telemed J E Health. 2009;15(3):231-40.	Ineligible study design
Krishnan A, Finkelstein EA, Levine E, Foley P, Askew S, Steinberg D, et al. A Digital Behavioral Weight Gain Prevention Intervention in Primary Care Practice: Cost and Cost-Effectiveness Analysis. J Med Internet Res. 2019;21(5):e12201	Ineligible intervention
Kruger J, Brennan A, Strong M, Thomas C, Norman P, Epton T. The cost-effectiveness of a theory-based online health behaviour intervention for new university students: an economic evaluation. BMC Public Health. 2014;14(1011):1-16.	Limited ability to inform the committee about the factors of interest
Larsen-Cooper E, Bancroft E, Rajagopal S, O'Toole M, Levin A. Scale matters: a cost-outcome analysis of an m-health intervention in Malawi. Telemed J E Health. 2016;22(4):317-24.	Ineligible population
Lawlor DA, Kipping RR, Anderson EL, Howe LD, Chittleborough CR, Moure-Fernandez A, et al. Active for Life Year 5: a cluster randomised controlled trial of a primary school-based intervention to increase levels of physical activity, decrease sedentary behaviour and improve diet. NIHR Journals Library 2016	Ineligible intervention
Leahey TM, Fava JL, Seiden A, Fernandes D, Doyle C, Kent K, et al. A randomized controlled trial testing an Internet delivered cost-benefit approach to weight loss maintenance. Prev Med. 2016;92:51-57.	Ineligible population
Levy DE, Klinger EV, Linder JA, Fleegler EW, Rigotti NA, Park ER, et al. Cost-effectiveness of a health system-based smoking cessation program. Nicotine Tob Res 2017;19(12):1508-15.	Ineligible intervention
Lewis BA, Williams DM, Neighbors CJ, Jakicic JM, Marcus BH. Cost Analysis of Internet vs. Print Interventions for Physical Activity Promotion. Psychol Sport Exerc. 2010: 11(3):246-249	Ineligible study design
Li R, Qu S, Zhang P, Chattopadhyay S, Gregg EW, Albright A, et al. Economic evaluation of combined diet and physical activity promotion programs to prevent type 2 diabetes among persons at increased risk: a systematic review for the community preventive services task force. Ann Intern Med. 2015;163(6):452-60.	Ineligible outcomes

Full reference	Reason for exclusion
Little P, Stuart B, Hobbs FR, Kelly J, Smith ER, Bradbury KJ, et al. An internet-based intervention with brief nurse support to manage obesity in primary care (POWeR+): a pragmatic, parallel-group, randomised controlled trial. Lancet Diabetes Endocrinol. 2016;4(10):821-8.	Ineligible intervention
Little P, Stuart B, Richard Hobbs FD, Kelly J, Smith ER, Bradbury KJ, et al. Randomised controlled trial and economic analysis of an internet-based weight management programme: POWeR+ (positive online weight reduction). Health Technol Assess. 2017;21(4):1-61.	Ineligible intervention
Lohan M, Aventin A, Maguire L, Curran R, McDowell C, Agus A, et al. Increasing boys' and girls' intentions to avoid teenage pregnancy: a cluster randomised controlled feasibility trial of an interactive video drama-based intervention in post-primary schools in Northern Ireland. Public Health Research. 2017; 5(1): Available from: https://dx.doi.org/10.3310/phr05010	Ineligible study design
Lohse N, Marseille E, Kahn JG. Development of a model to assess the cost-effectiveness of gestational diabetes mellitus screening and lifestyle change for the prevention of type 2 diabetes mellitus. Int J Gynaecol Obstet. 2011;115(Suppl 1):S20-25.	Ineligible intervention
Lorig KR, Ritter PL, Dost A, Plant K, Laurent DD, McNeil I. The expert patients programme online, a 1-year study of an Internet-based self-management programme for people with long-term conditions. Chronic Illness. 2008;4(4):247-56.	Limited ability to inform the committee about the factors of interest
Loveman E, Frampton GK, Shepherd J, Picot J, Cooper K, Bryant J, et al. The clinical effectiveness and cost-effectiveness of long-term weight management schemes for adults: a systematic review. Health Technol Assess. 2008;15(2):1-182.	Ineligible outcomes
Lu C, Schultz AB, Sill S, Petersen R, Young JM, Edington DW. Effects of an incentive-based online physical activity intervention on health care costs. J Occup Environ Med. 2008;50(11):1209-15.	Llimited ability to inform the committee about the factors of interest
Luxton DD, Hansen RN, Stanfill K. Mobile app self-care versus in-office care for stress reduction: a cost minimization analysis. J Telemed Telecare. 2014;20(8):431-35.	Ineligible population
Maddison R, Pfaeffli L, Whittaker R, Stewart R, Kerr A, Jiang Y, et al. A mobile phone intervention increases physical activity in people with cardiovascular disease: results from the HEART randomized controlled trial. Eur J Prev Cardiol. 2015;22(6):701-9.	Limited ability to inform the committee about the factors of interest
Marcolino MS, Oliveira JAQ, D'Agostino M, Ribeiro AL, Alkmim MBM, Novillo-Ortiz D. The impact of mHealth interventions: systematic review of systematic reviews. JMIR Mhealth Uhealth. 2018;6(1):E23.	Ineligible outcomes

Full reference	Reason for exclusion
Mateo KF, Jay M. Access to a behavioral weight loss website with or without group sessions increased weight loss in statewide campaign. J Clin Outcomes Manag. 2014;21(8):345-48.	Ineligible outcomes
Mauriello LM, Gkbayrak NS, Van Marter DF, Paiva AL, Prochaska JM. An internet-based computer-tailored intervention to promote responsible drinking: findings from a pilot test with employed adults. Alcohol Treat Q. 2011;30(1):91-108.	Ineligible outcomes
McConnon A, Kirk SFL, Cockroft JE, Harvey EL, Greenwood DC, Thomas JD, et al. The Internet for weight control in an obese sample: results of a randomised controlled trial. BMC Health Serv Res. 2007;7:206.	Limited ability to inform the committee about the factors of interest
Medical Advisory S. Behavioural interventions for type 2 diabetes: an evidence-based analysis. Ont Health Technol Assess Ser. 2009;9(21):1-45.	Ineligible outcomes
Miners A, Harris J, Felix L, Murray E, Michie S, Edwards P. An economic evaluation of adaptive e-learning devices to promote weight loss via dietary change for people with obesity. BMC Health Serv Res. 2012;12(190):1-9.	Limited ability to inform the committee about the factors of interest
Moreau M, Gagnon M-P, Boudreau F. Development of a fully automated, web-based, tailored intervention promoting regular physical activity among insufficiently active adults with type 2 diabetes: integrating the I-change model, self-determination theory, and motivational interviewing components. JMIR research protocols. 2015;4(1):E25.	Ineligible study design
Murphy SM, Campbell ANC, Ghitza UE, Kyle TL, Bailey GL, Nunes EV, et al. Cost-effectiveness of an internet-delivered treatment for substance abuse: data from a multisite randomized controlled trial. Drug Alcohol Depend. 2016;161:119-26.	Ineligible population
Naughton F, Cooper S, Bowker K, Campbell K, Sutton S, Leonardi-Bee J, et al. Adaptation and uptake evaluation of an SMS text message smoking cessation programme (MiQuit) for use in antenatal care. BMJ Open. 2015;5(10):E008871.	Ineligible outcomes
Naughton F, Cooper S, Foster K, Emery J, Leonardi-Bee J, Sutton S, et al. Large multi-centre pilot randomized controlled trial testing a low-cost, tailored, self-help smoking cessation text message intervention for pregnant smokers (MiQuit). Addiction. 2017;112(7):1238-49.	Ineligible population
Neumann A, Schwarz P, Lindholm L. Estimating the cost-effectiveness of lifestyle intervention programmes to prevent diabetes based on an example from Germany: Markov modelling. Cost Eff Resour Alloc. 2011;9(17):1-13.	Ineligible intervention
Ohinmaa A, Chatterley P, Nguyen T, Jacobs P. Telehealth in substance abuse and addiction: review of the literature on smoking, alcohol, drug abuse and gambling. Alberta: Institute of Health Economics; 2010. Available from:	Systematic review

Full reference	Reason for exclusion
https://www.ihe.ca/advanced-search/telehealth-in-substance-abuse-and-addiction-review-of-the-literature-on-smoking-alcohol-drug-abuse-and-gambling.	
Olmstead TA, Ostrow CD, Carroll KM. Cost-effectiveness of computer-assisted training in cognitive-behavioral therapy as an adjunct to standard care for addiction. Drug Alcohol Depend. 2010;110(3):200-07.	Ineligible population
Oosterhoff M, Bosma H, van Schayck OCP, Evers SMAA, Dirksen CD, Joore MA. A systematic review on economic evaluations of school-based lifestyle interventions targeting weight-related behaviours among 4-12year olds: issues and ways forward. Prev Med. 2018;114:115-22.	Ineligible intervention
Osilla KC, Van Busum K, Schnyer C, Larkin JW, Eibner C, Mattke S. Systematic review of the impact of worksite wellness programs. Am J Manag Care. 2012;18(2):E68-81.	Ineligible outcomes
Park AL, McDaid D, Weiser P, Von Gottberg C, Becker T, Kilian R, et al. Examining the cost effectiveness of interventions to promote the physical health of people with mental health problems: a systematic review. BMC Public Health. 2013;13(787):1-17.	Ineligible outcomes
Peels DA, Hoogenveen RR, Feenstra TL, Golsteijn RH, Bolman C, Mudde AN, et al. Long-term health outcomes and cost-effectiveness of a computer-tailored physical activity intervention among people aged over fifty: modelling the results of a randomized controlled trial. BMC Public Health. 2014;14(1):1099.	Ineligible population
Perman G, Rossi E, Waisman GD, Aguero C, Gonzalez CD, Pallordet CL, et al. Cost-effectiveness of a hypertension management programme in an elderly population: a Markov model. Cost Eff Resour Alloc. 2011;9(4):1-11.	Ineligible intervention
Pifarre M, Carrera A, Vilaplana J, Cuadrado J, Solsona S, Abella F, et al. TControl: a mobile app to follow up tobacco-quitting patients. Comput Methods Programs Biomed. 2017;142:81-89.	Ineligible population
Pringle A, Cooke C, Gilson N, Marsh K, McKenna J. Cost-effectiveness of interventions to improve moderate physical activity: a study in nine UK sites. Health Educ J. 2010;69(2):211-24.	Ineligible intervention
Prinja S, Bahuguna P, Rudra S, Gupta I, Kaur M, Mehendale SM, et al. Cost effectiveness of targeted HIV prevention interventions for female sex workers in India. Sex Transm Infect. 2011;87(4):354-61.	Ineligible intervention
Prybutok G. An analysis of randomised controlled trials that utilise internet based smoking reduction/cessation programs. IJEH. 2015;8(2-4):202-19.	Ineligible outcomes
Radcliff TA, Bobroff LB, Lutes LD, Durning PE, Daniels MJ, Limacher MC, et al. Comparing costs of telephone vs face-to-face extended-care programs for the management of obesity in rural settings. J Acad Nutr Diet. 2012;112(9):1363-73.	Ineligible intervention

Full reference	Reason for exclusion
Rasu RS, Hunter CM, Peterson AL, Maruska HM, Foreyt JP. Economic evaluation of an internet-based weight management program. Am J Manag Care. 2010;16(4):E98-104.	Limited ability to inform the committee about the factors of interest
Reback, C.J.; Fletcher, J.B.; Leibowitz, A.A. Cost effectiveness of text messages to reduce methamphetamine use and HIV sexual risk behaviors among men who have sex with men. Journal of Substance Abuse Treatment 2019;100: 59-63	Ineligible outcome
Redman LM, Gilmore LA, Breaux J, Thomas DM, Elkind-Hirsch K, Stewart T, et al. Effectiveness of SmartMoms, a novel ehealth intervention for management of gestational weight gain: randomized controlled pilot trial. JMIR Mhealth Uhealth. 2017;5(9):E133.	Ineligible intervention
Riemsma R, Pattenden J, Bridle M, Sowden A, Mather L, Watt I, et al. A systematic review of the effectiveness of interventions based on a stages-of-change approach to promote individual behaviour change in health care settings. Health Technol Assess. 2002; 6(24): Available from: https://www.journalslibrary.nihr.ac.uk/hta/hta6240/#/abstract	Systematic review
Rinaldi G, Kiadaliri AA, Haghparast-Bidgoli H. Cost effectiveness of HIV and sexual reproductive health interventions targeting sex workers: a systematic review. Cost Eff Resour Alloc. 2018;16(63):1-13.	Ineligible intervention
Robertson C, Archibald D, Avenell A, Douglas F, Hoddinott P, van Teijlingen E, et al. Systematic reviews of and integrated report on the quantitative, qualitative and economic evidence base for the management of obesity in men. Health Technol Assess. 2014;18(35)	Systematic review
Robroek SJW, Polinder S, Bredt FJ, Burdorf A. Cost-effectiveness of a long-term internet-delivered worksite health promotion programme on physical activity and nutrition: a cluster randomized controlled trial. Health Educ Res. 2012;27(3):399-410.	Limited ability to inform the committee about the factors of interest
Rogozińska E, Marlin N, Jackson L, Rayanagoudar G, Ruifrok AE, Dodds J, et al. Effects of antenatal diet and physical activity on maternal and fetal outcomes: individual patient data meta-analysis and health economic evaluation. Health Technol Assess. 2017;21(41):1-158.	Ineligible intervention
Rollo ME, Burrows T, Vincze LJ, Harvey J, Collins CE, Hutchesson MJ. Cost evaluation of providing evidence-based dietetic services for weight management in adults: in-person versus eHealth delivery. Nutr Diet. 2018;75(1):35-43.	Ineligible study design
Rubinstein A, Garcia Marti S, Souto A, Ferrante D, Augustovski F. Generalized cost-effectiveness analysis of a package of interventions to reduce cardiovascular disease in Buenos Aires, Argentina. Cost Eff Resour Alloc. 2009;7(10):1-10.	Ineligible intervention

Full reference	Reason for exclusion
Sacks N, Cabral H, Kazis LE, Jarrett KM, Vetter D, Richmond R, et al. A web-based nutrition program reduces health care costs in employees with cardiac risk factors: before and after cost analysis. J Med Internet Res. 2009;11(4):E43.	Limited ability to inform the committee about the factors of interest
Sanyal C, Stolee P, Juzwishin D, Husereau D. Economic evaluations of eHealth technologies: a systematic review. PLoS ONE. 2018;13(6):E0198112.	Ineligible study design
Schulz DN, Smit ES, Stanczyk NE, Kremers SPJ, de Vries H, Evers SMAA. Economic evaluation of a web-based tailored lifestyle intervention for adults: findings regarding cost-effectiveness and cost-utility from a randomized controlled trial. J Med Internet Res. 2014;16(3):E91.	Ineligible population
Schulz DN, Smit ES, Stanczyk NE, Kremers SPJ, De Vries H, Evers SMAA. Economic evaluation of a web-based tailored lifestyle intervention for adults: findings regarding cost-effectiveness and cost-utility from a randomized controlled trial. Diabetes Technol Ther. 2015;17(Suppl 1):S54-S55.	Ineligible study design
Semwal M, Whiting P, Bajpai R, Bajpai S, Kyaw BM, Tudor C. Digital Education for Health Professions on Smoking Cessation Management: Systematic Review by the Digital Health Education Collaboration. J Med Internet Res 2019;21(3):e13000	Ineligible study design
Sevick MA, Napolitano MA, Papandonatos GD, Gordon AJ, Reiser LM, Marcus BH. Cost-effectiveness of alternative approaches for motivating activity in sedentary adults: results of project STRIDE. Prev Med. 2007;45(1):54-61.	Ineligible intervention
Sharifi M, Franz C, Horan CM, Giles CM, Long MW, Ward ZJ, et al. Cost-effectiveness of a clinical childhood obesity intervention. Pediatrics. 2017;140(5):1-11.	Ineligible intervention
Shaw R, Fenwick E, Baker G, McAdam C, Fitzsimons C, Mutrie N. 'Pedometers cost buttons': the feasibility of implementing a pedometer based walking programme within the community. BMC Public Health. 2011;11(200):1-9.	Ineligible study design
Shepherd J, Kavanagh J, Picot J, Cooper K, Harden A, Barnett-Page E, et al. The effectiveness and cost-effectiveness of behavioural interventions for the prevention of sexually transmitted infections in young people aged 13–19: a systematic review and economic evaluation. Health Technol Assess. 2010;14(7):1-230.	Ineligible intervention
Skov-Ettrup L. The effectiveness of telephone counselling and internet- and text-message-based support for smoking cessation: results from a randomized controlled trial. Addiction. 2016;111(7):1257-66.	Ineligible population
Smit ES, Evers SM, de Vries H, Hoving C. Cost-effectiveness and cost-utility of Internet-based computer tailoring for smoking cessation. J Med Internet Res. 2013;15(3):e57.	Ineligible population

Full reference	Reason for exclusion
Smit F, Lokkerbol J, Riper H, Majo MC, Boon B, Blankers M. Modelling the cost-effectiveness of health care systems for alcohol use disorders: how implementation of eHealth interventions improves cost-effectiveness. J Med Internet Res. 2011;13(3):E56.	Ineligible population
Smith KJ, Hsu HE, Roberts MS, Kramer MK, Orchard TJ, Piatt GA, et al. Cost-effectiveness analysis of efforts to reduce risk of type 2 diabetes and cardiovascular disease in Southwestern Pennsylvania, 2005-2007. Prev Chronic Dis. 2010;7(5):A109.	Ineligible intervention
Smith KJ, Kuo S, Zgibor JC, McTigue KM, Hess R, Bhargava T, et al. Cost effectiveness of an internet-delivered lifestyle intervention in primary care patients with high cardiovascular risk. Prev Med. 2016;87:103-09.	Ineligible intervention
Smith MY, Cromwell J, DePue J, Spring B, Redd W, Unrod M. Determining the cost-effectiveness of a computer-based smoking cessation intervention in primary care. Manag Care. 2007;16(7):48-55.	Ineligible population
Sniehotta FF, Evans EH, Sainsbury K, Adamson A, Batterham A, Becker F, et al. Behavioural intervention for weight loss maintenance versus standard weight advice in adults with obesity: A randomised controlled trial in the UK (NULevel Trial). PLoS Med. 2019;16(5):e1002793	Ineligible population
Sohn S, Helms TM, Pelleter JT, Muller A, Krottinger AI, Schoffski O. Costs and benefits of personalized healthcare for patients with chronic heart failure in the care and education program "Telemedicine for the Heart". Telemed J E Health. 2012;18(3):198-204.	Ineligible intervention
Southard BH, Southard DR, Nuckolls J. Clinical trial of an internet-based case management system for secondary prevention of heart disease. J Cardpulm Rehabil. 2003;23(5):341-34.	Ineligible population
Stanczyk NE, Smit ES, Schulz DN, De Vries H, Bolman C, Muris JWM, et al. An economic evaluation of a video- and text-based computer-tailored intervention for smoking cessation: a cost-effectiveness and cost-utility analysis of a randomized controlled trial. PLoS ONE. 2014;9(10):e110117.	Ineligible population
Sukhanova A, Ritzwoller DP, Alexander G, Calvi JH, Carlier C, McClure JB, et al. Cost analyses of a web-based behavioral intervention to enhance fruit and vegetable consumption. Int J Behav Nutr Phys Act. 2009;6:92.	Limited ability to inform the committee about the factors of interest
Sun Y, You W, Almeida F, Estabrooks P, Davy B. The effectiveness and cost of lifestyle interventions including nutrition education for diabetes prevention: a systematic review and meta-analysis. J Acad Nutr Diet. 2017;117(3):E36(404-21).	Ineligible intervention
Thangaratinam S, Rogozinska E, Jolly K, Glinkowski S, Duda W, Borowiack E, et al. Interventions to reduce or prevent obesity in pregnant women: a systematic review. Health Technol Assess. 2007;16(31):1-191.	Ineligible intervention

Full reference	Reason for exclusion
The Swedish Council on Technology Assessment in Health Care. Methods of promoting physical activity. A systematic review. Stockholm: SBU; 2006. 1-14. Available from: https://www.ncbi.nlm.nih.gov/books/NBK447978/pdf/Bookshelf_NBK447978.pdf.	Systematic review
Van den Bruel A, Cleemput I, Van Linden A, Schoefs D, Ramaekers D, Bonneux L. Effectiveness and cost-effectiveness of treatments for smoking cessation. KCE. 2004;1A	Systematic review
van Luenen S, Kraaij V, Garnefski N, Spinhoven P, van den Akker-van Marle ME. Cost-utility of a guided Internet-based intervention in comparison with attention only for people with HIV and depressive symptoms: A randomized controlled trial. J Psychosom Res. 2019;118:34-40	Ineligible outcome
van Wier MF, Dekkers JC, Bosmans JE, Heymans MW, Hendriksen IJM, Pronk NP, et al. Economic evaluation of a weight control program with e-mail and telephone counseling among overweight employees: a randomized controlled trial. Int J Behav Nutr Phys Act. 2012;9(112):1-12	Ineligible intervention
Vickerman KA, Keller PA, Deprey M, Lachter RB, Jenssen J, Dreher M. Never quit trying: reengaging tobacco users in statewide cessation services. J Public Health Manag Pract. 2018;24(3):E25-33.	Ineligible population
Vidmar AP, Pretlow R, Borzutzky C, Wee CP, Fox DS, Fink C, et al. An addiction model-based mobile health weight loss intervention in adolescents with obesity. Pediatr Obes. 2019;14(2):E12464.	Ineligible study design
Wake M, Baur LA, Gerner B, Gibbons K, Gold L, Gunn J, et al. Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial. BMJ. 2009;339:(B3308)	Ineligible intervention
Wake M, Gold L, McCallum Z, Gerner B, Waters E. Economic evaluation of a primary care trial to reduce weight gain in overweight/obese children: the LEAP trial. Ambul Pediatr. 2008;8(5):336-41.	Ineligible intervention
Webb J, Fife-Schaw C, Ogden J. A randomised control trial and cost-consequence analysis to examine the effects of a print-based intervention supported by internet tools on the physical activity of UK cancer survivors. Public Health. 2019;171:106-115	Ineligible outcome
Webb J, Hall J, Hall K, Fabunmi-Alade R. Increasing the frequency of physical activity very brief advice by nurses to cancer patients. A mixed methods feasibility study of a training intervention. Public Health. 2016;139:121-33.	Ineligible population
West R, Coyle K, Owen L, Coyle D, Pokhrel S, Group ES. Estimates of effectiveness and reach for 'return on investment' modelling of smoking cessation interventions using data from England. Addiction. 2018;113(Suppl 1):19-31.	Ineligible intervention
Whitaker R, Hendry M, Aslam R, Booth A, Carter B, Charles JM, et al. Intervention now to eliminate repeat unintended pregnancy in teenagers	Ineligible intervention

Full reference	Reason for exclusion
(INTERUPT): a systematic review of intervention effectiveness and cost-effectiveness, and qualitative and realist synthesis of implementation factors and user engagement. Health Technol Assess. 2016;20(16):1-214.	
Whittaker F, Wade V. The costs and benefits of technology-enabled, home-based cardiac rehabilitation measured in a randomised controlled trial. J Telemed Telecare. 2014;20(7):419-22.	Ineligible intervention
Wong CK, Jiao F-F, Siu S-C, Fung CS, Fong DY, Wong K-W, et al. Cost-effectiveness of a short message service intervention to prevent type 2 diabetes from impaired glucose tolerance. J Diabetes Res. 2016;2016	Ineligible intervention
Wu S, Cohen D, Shi Y, Pearson M, Sturm R. Economic analysis of physical activity interventions. Am J Prev Med. 2011;40(2):149-58.	Systematic review
Wyke S, Hunt K, Gray CM, et al. Football Fans in Training (FFIT): a randomised controlled trial of a gender-sensitised weight loss and healthy living programme for men – end of study report. NIHR Journals Library 2015	Ineligible intervention
Wyke S, Bunn C, Andersen E, Silva MN, van Nassau F, McSkimming P, et al. The effect of a programme to improve men's sedentary time and physical activity: The European Fans in Training (EuroFIT) randomised controlled trial. PLoS Med. 2019;16(2):e1002736	Ineligible intervention
Zanaboni P, Lien LA, Hjalmarsen A, Wootton R. Long-term telerehabilitation of COPD patients in their homes: interim results from a pilot study in Northern Norway. J Telemed Telecare. 2013;19(7):425-9.	Ineligible study design
Zivin K, Sen A, Plegue MA, Maciejewski ML, Segar ML, AuYoung M, et al. Comparative effectiveness of wellness programs: impact of incentives on healthcare costs for obese enrollees. Am J Prev Med. 2017;52(3):347-52.	Limited ability to inform the committee about the factors of interest
Zoellner JM, You W, Estabrooks PA, Chen Y, Davy BM, Porter KJ, et al. Supporting maintenance of sugar-sweetened beverage reduction using automated versus live telephone support: findings from a randomized control trial. Int J Behav Nutr Phys Act. 2018;15(1):97.	Ineligible outcomes

Appendix K – Intervention/comparison matrix

Study	Intervention mode	Arm	Components of intervention: Feedback: Normative feedback	Feedback: Personalised feedback	Feedback: Decisional balance exercise	Feedback: Financial impact	Knowledge on diet/exercise: Recommended amount of exercise or food/recipes	Knowledge on diet/exercise: Educational materials	Knowledge on diet/exercise: Health and risks	Knowledge on diet/exercise: Pros & cons of diet/exercise	Knowledge on diet/exercise: Exercises/ quizzes	Knowledge on diet/exercise: Videos/audio files	Monitoring: Diary	Monitoring: Goal setting	Monitoring: Stage of change	Monitoring: Coping strategies	Monitoring: Reminders to complete intervention	Components of intervention: Values & beliefs	Components of intervention: Motivation and self-efficacy	Components of intervention: Food/exercise preferences	Components of intervention: Information on other health behaviours	Components of intervention: Forum/social media-type platform	Components of intervention: Healthcare professional	Components of intervention: Tailoring	Components of intervention: Intensity	Outcomes: Fruit & veg intake	Outcomes: Sugar intake	Outcomes: Healthy diet	Outcomes: Physical activity	Outcomes: BMI/weight
No chronic conditions																														
Alexander 2010	Computer	Intervention	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	Yes	5 sessions/5 weeks					
		Other interventic	No	No	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	No	No	No	1 session					
Cameron 2015	Computer	Intervention	No	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	Yes	1 session					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Gell 2015	Text	Intervention	No	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No	3 texts/week for 24w					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Gomez 2016	Text & email	Intervention	No	Yes	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	1 session					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Hansen 2012	Computer	Intervention	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	Not reported					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Assessment only					
Kolt 2016	Computer	Intervention	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Continuous access					
		Other interventic	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	Yes	No	Continuous access					
Murray 2019	Computer	Intervention	No	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Daily interaction					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	n/a					
Spittaels 2007	Computer	Intervention	Yes	Yes	No	No	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	4 weeks					
		Other interventic	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Overweight or obese																														
Apiñaniz 2019	App & text	Intervention	No	No	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	No	No	No	Texts sent 1/day for 1m then 2/wk for 5m					
		Control	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	0 session					
Allen 2013	App	Intervention	No	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	Yes	No	No	1 session/35mins					
		Other interventic	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	1 session					
Carter 2013	App	Intervention	No	Yes	No	No	No	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No	Continuous access					
		Other interventic	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	Continuous use					
Dassen 2018	Computer	Intervention	No	No	No	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	No	No	No	No	No	No	No	No	Min. 25 sessions with 24-48h between sessions					
		Control	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	Min. 25 sessions with 24-48h between sessions					
Dunn 2019	App	Intervention	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	Yes	No	No	Whenever food was consumed					
		Other interventic	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	Yes	No	No	Whenever food was consumed					
Greene 2012	Social media/networking	Intervention	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes	No	No	1 session					
		Control	Yes	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Haapala 2009	Computer & text	Intervention	No	Yes	No	No	Yes	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No	1 session					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Hutchesson 201	Computer, app, email, text and	Intervention	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	Continuous access					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Assessment only					
Jane 2017	Social media/networking	Intervention	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No	No	No	No	Yes	No	No	1/week					
		Control	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Guidance provided					
Laing 2014	App	Intervention	No	Yes	No	Yes	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	1 session/30mins					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Marcus 2007	App	Intervention	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	No	Yes	Continuous access					
		Other interventic	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	89 msgs/3 months					
Patrick 2011	Computer	Intervention	No	Yes	No	No	Yes	No	No	No	Yes	No	Yes	Yes	No	No	No	No	Yes	No	No	No	No	Yes	1/week for 12months					
		Control	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	Access to website					
Tanaka 2010	Computer	Intervention	No	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	Weekly for 7 months					
		Other interventic	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Access to booklet					
Hypertension/CVD																														
Dale 2015	Text	Intervention	No	Yes	No	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes	No	Yes	Yes	5-7 msgs/week; 6-weekly educational progra					
		Control/CAU	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	6-weekly educational programs					
Santo 2018	Text	Intervention	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	No	Yes	4 text/wk for 6 months					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	n/a					
Verheijden 2004	Computer	Intervention	No	Yes	No	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes	No	Yes	At least once					
		Control/CAU	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Diabetes																														
Agboola 2016	Text	Intervention	No	Yes	No	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	No	Yes	>2msgs/day					
		Control/CAU	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Block 2015/16	Web & text	Intervention	No	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	No	Yes	15min/wk for 24wk					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Fischer 2019	Text	Intervention	No	No	No	No	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	6 texts/wk.; Self-report weight weekly					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	CAU including classes and appts for diet advice					
Glasgow 2012	Computer	Intervention	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Yes	No	Yes	No	No	No	No	Yes	Continuous access					
		Control/CAU	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Polgreen 2018	Text	Intervention	No	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No	No	No	Yes	1/day for 6 months					
		Other interventic	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Jennings 2014	Computer	Intervention	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	1/wk for 12 weeks					
		Control	No	Yes	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	1/wk for 12 weeks					
Cancer																														
Golsteijn 2018	Computer	Intervention	No	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	Optional	Yes	3 times in 3 months					
		Control/CAU	No	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	assessment only					
Ferrante 2018	Computer & wearable	Intervention	No	No	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No	Yes	No	No	Yes	No	No	30min session; continuous Fitbit tracking and website					
		Control	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	1 session					
Haggerty 2017	Text	Intervention	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No	Yes	3-5msgs/day; weekly recording					
		Control/CAU	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No	No	Weekly recording					
Kanera 2017	Computer	Intervention	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	Continuous access					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Musculoskeletal																														
Bossen 2013	Computer	Intervention	No	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	No	No	No	Yes	1/wk for 9 weeks					
		Control	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Pregnancy																														
Olson 2018	Computer	Intervention	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No	1/week					
		Control	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No	1/week					
Kernot 2019	App & computer	Intervention	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No	Daily reporting and PA tips					
		Control	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Smith 2016	Computer	Intervention	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	3 week-long data collection periods					
		Control/CAU	No	No	No	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Pregnancy																														
Chen 2011	Computer	Intervention	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Continuous access					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Chen 2017	App, wearable & text	Intervention	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No	No	daily					
		Control	No	No	No	No	No	Yes	No	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	No	No	8 10min sessions					
Simons 2015	Gaming	Intervention	No	No	No	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No	Continuous access					
		Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					
Hootmaker 2016	Computer	Intervention	No	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	Mandatory first week; optional afterwards					
		Control	No	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	assessment only					

Key: Most effective | Equivalent | Ineffective