Public health interventions to promote mental well-being in people aged 65 and over. A systematic review of effectiveness and cost effectiveness.

Evidence Tables

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<table>
<tr><th>Study Details</th><th>Intervention and population details</th><th>Analyses</th><th>Results</th><th>Comments</th></tr>
<tr>
<td>Annesi (2004a)

CBAS
(quality rating -)

Objective:
What are the mood changes in two age groups of women starting exercise programmes?

Recruitment:
Total sampling frame and initial refusals not reported. 96 women who initiated membership in the community wellness centre and gave informed consent were the study sample. The control group were women who also initiated membership, but indicated that they were not ready to begin an exercise programme.

Setting:
Community wellness centre

Country:
South-eastern USA

Funding Source:
Not reported</td>
<td>The intervention is a moderate exercise programme. Each participant was individually trained by the exercise leader in the study's protocol. 1 set of between 8 and 11 weight stack machines for 8 to 12 reps (to muscle fatigue) on 3 non-consecutive days per week. 20 -30 minutes of cardiovascular exercise on self-selected machine.

Providers/Deliverers: Exercise leader.

Length: Not reported.

Duration: 10 weeks.

Intensity: Moderate.

Comparator: Did not begin an exercise programme before termination of this study.

<u>Population details</u>
Inclusion: Female between the ages of 21 and 45 (younger exercise), 55 and 80 (older exercise) and 21 and 80 (control). No regular exercise in the previous 6 months. Apparently healthy based on health risk appraisal. POMS score at intake within +/- 1 SD of the sex-adjusted mean previously reported.

Exclusion: Not reported
Unit of allocation: Individual

Total: n = 96
Intervention: n = 64
Comparator: n = 32.
Gender: 100% women
Mean age (range):
Younger (23-45 years) M = 32.6, SD = 7.1; older (55-79 years) M = 63.4, SD = 6.5; control (25-73 years) M = 48.4, SD = 15.7.

SES: Primarily middle class participants</td>
<td>Baseline comparability:
Ethnic and socioeconomic make-up were similar. No other comparisons are made at baseline.

<u>Attrition</u>
Number of participants completing study: Not reported.

Reasons for non-completion:
Not reported.

<u>Process details</u>
Data collection methods: Self-report.

Statistical methods:
ANOVA, ANCOVA. Scheffe follow-up tests.

Unit of analysis: Individual

Time to follow up: Post-intervention (10 weeks).

Mental well-being measure(s):
Profile of Mood States (POMS).

Power calculation:
Not reported.</td>
<td>ANOVA indicated no significant mean difference between groups on the POMS dimension of tension (F 2,93 = 1.23, ns), depression (F 2,93 = 0.58, ns) or fatigue (F 2,93 = 1.04, ns) scores at week 1.

ANCOVA with scores at week 1 as the covariate revealed a significant group difference in mood changes over 10 wks.
<table>
<tr><th></th><th>Tension</th><th>Depression</th><th>Vigour</th><th>Fatigue</th></tr>
<tr><td>Control
Week 1</td><td>6.7
(3.9)</td><td>5.9
(5.2)</td><td>15.4
(5.8)</td><td>7.0
(3.4)</td></tr>
<tr><td>Week 10</td><td>7.4
(3.5)</td><td>6.4
(4.4)</td><td>15.8
(5.9)</td><td>7.5
(4.4)</td></tr>
<tr><td>Younger
Week 1</td><td>7.7
(3.8)</td><td>6.1
(4.9)</td><td>16.8
(5.6)</td><td>7.8
(5.7)</td></tr>
<tr><td>Week 10</td><td>3.8
(2.8)</td><td>2.3
(3.2)</td><td>20.6
(4.2)</td><td>2.9
(2.8)</td></tr>
<tr><td>Older
Week 1</td><td>5.6
(4.0)</td><td>4.0
(3.7)</td><td>14.2
(6.7)</td><td>5.5
(4.1)</td></tr>
<tr><td>Week 10</td><td>3.3</td><td>2.6</td><td>15.3</td><td>4.2</td></tr>
<tr><td>$F_{2,93}$</td><td>6.97,
p<.01</td><td>18.72
(p<.01)</td><td>4.31
(p<.05)</td><td>15.68
(p<.01)</td></tr>
</table>
Scheffe follow-up tests indicated that both the younger and older exercise groups improved significantly more than the no-exercise control group on all scales (tension, depression, vigour and fatigue – no data reported).

No significant differences were found between the two exercise groups on changes over 10 wk. Scores at Week 10 significantly differed between the younger and older treatment groups on the Vigour scale only (t62 = 3.64, p< .01).

Post hoc testing indicated that, when treatment groups' mood scores were aggregated, the amount of improvement over 10 wk was significantly correlated with Week 1 scores on Tension (r_{62} = - .63, p<.01), Depression (r_{62} = -.75, p<.01), and Fatigue (r_{62} = -.74, p<.01), but not Vigour (r_{62} = -.22, ns)

Adverse effects: None reported</td>
<td>1 The women had already joined the community facility, and so were motivated to undertake exercise.

2 Strange choice of control group – between 2 very different intervention groups

3 Problem exacerbated by lack of power calculation

Applicability:
The intervention has face validity and could be undertaken in UK. However the findings might generalise only to self-selectors for exercise</td>
</tr>
</table>

Study Details	Intervention and population details	Analyses	Results	Comments
Annesi (2004 b). Single group before and after [UBAS] (quality rating -) **Objective**: What is the relation of body fat to depression and overall mood changes over a 10-week course of moderate exercise in formerly sedentary older women? **Recruitment:** Participants enrolled in a supervised exercise programme. No details of how they were recruited or the number of the initial sampling frame are reported. **Setting**: Not reported, although paper would indicate a group/community setting. **Country:** Not reported (author is affiliated to American institution). **Funding Source**: Not reported.	The intervention is a 10 week, 30 session exercise programme of moderate cardiovascular, resistance and stretching exercises. **Providers/Deliverers:** Not reported. **Length**: Not reported. **Duration**: 10 weeks. **Intensity:** Moderate intensity (3 sessions per week). **Comparator:** No comparator. **Population details** **Inclusion**: Sedentary older women **Exclusion:** Not reported **Unit of allocation**: Individual **Total:** N = 62. **Intervention**: N = 62. **Comparator:** No comparator. **Gender**: 100% female. **Mean age (range):** Mean = 65.4, SD = 8.4. **SES**: Not reported.	**Baseline comparability:** Not applicable, no control group. **Attrition** **Number of participants completing study:** Not reported. **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Self-report. **Statistical methods:** Mean change, and non-parametric analyses using a high/low median split. **Unit of analysis:** Individual **Time to follow up**: Post intervention (at 10 weeks). **Mental well-being measure(s):** Profile of Mood States (POMS) **Power calculation**: A power analysis indicated enough participants to detect a medium effect at the recommended power of .80.	The mean change on the POMS dimension of depression was -2.1, SD = 4.9 and on total mood disturbance was -5.3, SD = 16.4 (it is unclear from the paper whether this is significant. . **Adverse effects:** None reported.	The study provides weak evidence that an exercise programme reduces depression scores A weakness was that variability's in responses (SD) were two to three times the mean change in scores. Also the authors report that distributions of change scores are usually skewed, making statistical interpretation problematic. This is a very short article and lacks sufficiently detailed information on many counts. **Applicability:** Finding is probably applicable to UK setting but little information given about the the components of this exercise programme.

Study Details	Intervention and population details	Analyses	Results	Comments
Annesi et al. (2004a) Experimental 2 condition before and after study [variant of UBAS] (quality rating -) **Objective:** Is 10 weeks of weight training more effective in improving mental well-being in older women when attention is focused on task or elsewhere? **Recruitment:** Women who registered for a 10 week strength training programme were recruited into the study. Each individual agreed to participate in the study. There are no details as to whether anyone declined to participate before allocation, or whether anyone dropped out before completion. **Setting:** YMCA, in a specifically designed room. **Country:** Northeast USA **Funding Source:** Not reported	10 weeks of resistance training three times per week in a specifically designed room. 1 set of 8 to 12 reps of 12 exercises per session. Associative condition - 5 to 8 verbal cues related to their exercises to maximise there attentional focus on the task. Socialising was kept minimal and distractors (e.g. music) were excluded. The dissociation group included casual conversation as well as music. There was minimal use of physically related verbal cues. Attentional focus to external stimuli such as imagery and music (as opposed to physiological sensation) was encouraged. **Providers/Deliverers:** Certified exercise professionals. **Length:** Not reported. **Duration:** 10 weeks. **Intensity:** 3 x per week. **Comparator:** There are two conditions of the intervention (associative and dissociative). No control group. **Population details** **Inclusion:** Minimum age of 50, no regular exercise in the last 6 months, apparently healthy based on a medical history questionnaire. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total: n =** 39. **Intervention:** n = 23. **Comparator:** n = 16. **Gender:** 100 % female. **Mean age (range):** 50-79 (M = 65.3, SD = 7.9). **SES:** Not reported.	**Baseline comparability:** Yes on age, weight, height, resting heart rate, percent body fat, or strength. **Attrition** **Number of participants completing study:** Not reported, but it would appear that all the participants completed. **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Self-report. **Statistical methods:** ANOVA and independent t tests. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** Post intervention (10 weeks) **Mental well-being measure(s):** POMS **Power calculation:** Not presented	For the associative group there were no significant 10 week changes for the POMS dimensions of depression, tension, fatigue, anger, confusion or vigour. For the dissociation group, significant 10 week changes (reductions) were found for the dimension of depression (T1 m=6.40, sd=2.73, T2 m=2.73 sd=3.6; t [15] =-2.64, p<.05, d=.64) tension (T1 m=7.67, sd=4.65, T2 m=5.27, sd=3.79; t [15] =-2.77, p<.05, d=-.57). There were no significant changes over time for fatigue, anger, confusion or vigour. **Adverse effects:** None reported	The authors have conducted a large number of t-tests, increasing the possibility of Type 1 errors. The authors do not acknowledge the study limitations. However the finding that depression and tension were reduced only in the dissociation group is interesting.. **Applicability:** The intervention has similarities with programmes in the UK and is likely to be applicable to similar populations and settings.

Study Details	Intervention and population details	Analyses	Results	Comments
Annesi et al .(2004b) Before and after study (no control group) [UBAS] (quality rating -) **Objective**: What is the effect of 10 weeks of combined strength and cardiovascular exercise on both physiological and psychological measures? **Recruitment:** The participants volunteered. There are no more details on recruitment. **Setting**: YMCA. **Country:** South-east USA. **Funding Source**: Not reported.	10 weeks of combined resistance and cardiovascular exercise (order alternated each session) with 2 sessions per week. Approx 20 minutes of cardiovascular exercise per session at rate of perceived exertion of 4 or 5. 11 resistance exercises. **Providers/Deliverers:** Exercise professionals and registered dieticians. **Length**: Approx 20 minutes of cardiovascular exercise per session. **Duration:** 10 weeks **Intensity:** Cardiovascular exercise at RPE 4 or 5 = moderate intensity. **Comparator:** No comparator. **Population details** **Inclusion**: Minimum age of 60 years; no regular exercise within the previous year; no contraindications for exercise; no use of blood pressure medication. **Exclusion:** None reported. **Unit of allocation**: Individual. **Total:** n = 17 participants. **Intervention**: n = 17. **Comparator:** None **Gender**: 100% female **Mean age (range):** mean age = 66.8 years (range 60-75). **SES:** Middle socioeconomic status.	**Baseline comparability:** N/A, only 1 group. **Attrition** **Number of participants completing study:** n = 17 (100%). **Reasons for non-completion:** Not applicable. **Process details** **Data collection methods:** Self-report. **Statistical methods:** Descriptive statistics - means and standard deviations. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up**: Two or three days after final exercise session. **Mental well-being measure(s):** Profile of Mood States (POMS) . **Power calculation**: None reported.	Significant improvements were found for: total mood disturbance (pre m=6.9, sd=15.2, post m=2.2 sd=14.6; d=.32) and the dimensions of depression (pre m=2.8 sd=3.1, post m=1.8, sd=1.8 d=.55) and fatigue (pre m=4.5, sd=3.8, post m=3.1, sd=3.6; d=.37). **Adverse effects:** None reported	The study focus is on a small volunteer group with very specific characteristics of ethnicity and socio-economic status. The very small sample size and weak study design severely limits the usefulness of the study. At best the study provides some weak evidence that exercise has a positive effect on mood disturbance, depression and fatigue. **Applicability:** The intervention has similarities with programmes in the UK and is likely to be applicable to similar populations and settings

Study Details	Review Parameters	Review Parameters	Results	Comments
Arent et al. (2000). Meta-analysis [MA] (quality rating +) **Objective**: What are the effects of exercise on mood in older adults? **Databases Searched:** PsycLit, ERIC, SPORTDiscus, Dissertation abstracts, healthStar, Medline. Handsearches of Psychological Abstracts and Social Science Citation Index, and other relevant journals in the areas of gerontology, psychology and exercise science. **Years:** Before 1998. **Funding Source**: Not reported.	**Criteria for Inclusion of studies**: Examined the effect of exercise on some construct of mood in older adults. At least one of the following: The mean age of the study sample was >65; there must have been at least one exercising group with a mean age of >65; or if mean ages were not provided, the age range of the participants must have had a lower bound of at least 60 years. All English language studies. **Exclusion:** Insufficient data to calculate Effect sizes. **Number of studies included:** 32 studies. Experimental vs. control group comparisons n=61; pre-post test comparisons n=83; correlational n=24. **Data Extraction:** Design and descriptive characteristics, participant characteristics, exercise characteristics and mood assessment characteristics. The included studies were coded for a number of characteristics based on a priori decisions regarding potential moderator variables for the exercise-mood relationship in the elderly. These characteristics were classified as design and descriptive characteristics, participant characteristics, exercise characteristics, and mood assessment characteristics. Separate forms were used for each of the three databases. Moderator variables were identified through the previous related meta-analyses and suggestions made by authors in the gerontology literature. The primary author coded all studies. Potential coder drift was assessed by selecting 10 of the coded studies at random and re-coding them. A per-case agreement rate was calculated or each study. An agreement rate of .90 was required to be considered acceptable.	**Synthesis:** Separate analyses of effect size were conducted for each of the three categories of studies. Tests for homogeneity were conducted. **Details of Heterogeneity:** Yes there is heterogeneity across studies.	The overall mean effect size for mood based on a total of 51 effect sizes was 0.34 (p<.05) indicating that compared to a control group exercise improves mood (10 effect sizes were excluded as they were not comparable at baseline). The largest effect size for frequency was related to the studies in which participants exercised </= 3 days a week, which was significantly different from 0 (ES=0.69, sd=0.45). It was also significant from the average effect size associated with exercising >/= 3 days a week. The largest average effect for time per session was associated with exercise bouts that were self selected and variable in duration (ES=0.86, sd=0.50). Exercise that lasted >45mins was also significant (ES=0.36, sd=0.40). All levels of weeks of participation were associated with effect sizes significantly greater than 0; 1-6 weeks ES=0.48, sd=0.59, 7-12 weeks ES=0.45, sd=0.39, >12 weeks ES=0.19, sd=0.27. The average effect associated with low intensity exercise (ES=0.58, sd=0.29) was significantly greater than that associated with either medium (ES=0.26, sd=0.40) or high intensities (ES=0.29, sd=0.46). Cardiovascular exercise (ES=0.26, sd=0.46), resistance training (0.38, sd=0.43) and a combination of both (0.49, sd=0.43) were all associated with effects significantly greater than 0. Resistance training produced greater effects than all other types of activity (ES=0.80, sd=0.24. High (ES=0.29, sd=0.45), medium (ES=0.38, sd=0.45) and low (ES=0.34, sd=0.31) intensities were all significantly different from zero but not from each other. Exercise was associated with improved mood across all levels of initial health status, not just those in poorest health (health not reported ES=0.35, sd=0.40; healthy and active ES=0.27, sd=0.38; healthy and sedentary ES=0.19, sd=0.33; mixed ES=0.44, sd=0.46). Studies that reported cardiovascular fitness increase were associated with significantly larger effect sizes (ES=0.48. sd=0.45) than those that reported no fitness increase (ES=0.16, sd=0.29) suggesting physiological improvement might moderate mood improvement. **Averse Effects:** None reported.	The results are consistent with the conclusions of a previous narrative and two meta-analytic reviews examining the effects of exercise. The examination of moderator variables is helpful as it provides some insight into potential mechanisms driving the exercise-mood relationship. The authors state that there is a lack of studies examining the effects of exercise on positive affect in the elderly. The research focussed on reducing bad mood rather than increasing good mood. They state that strength training is a viable form of exercise for this population, but needs evaluation in well-developed psychological studies. **Applicability:** This is a meta-analysis of international research and the results are likely to be applicable to the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Barnes & Bennett (1998). Qualitative study (quality rating –) **Objective:** Evaluation of the Users Panel Project, which aims to enable frail older people who are unable to leave their homes to discuss their experiences of growing older and of using health and social care services, and to use the outcomes of such discussion to influence service planning and provision. **Recruitment:** Project workers approached home carers, social workers, district nurses, health visitors, churches and voluntary groups asking for recommendations for people who may participate. 90 people were nominated and 62 agreed to participate. **Setting:** The panels met in a variety of venues that were appropriate for people with different physical impairments. Transport was provided. **Country:** Fife, Scotland. **Funding Source:** Not reported.	The intervention aimed to enable frail older people to discuss their experiences of growing older and of using health and social care services (but not to provide feedback on specific services) to influence service planning and provision. 7 panels were established. Discussions centred around growing older, and experiences of health and social care services. For example when the issue of home carers arose project workers invited panel members to set out their priorities for tasks to be undertaken by home carers. These priorities were then compared with those of the social work department. Key questions were developed to be put to social care managers. **Providers/Deliverers:** Age Concern Scotland. **Length:** Not reported. **Duration:** 3 year project. **Intensity:** monthly. **Comparator:** No comparator. **Population details** **Inclusion:** Frail older people who were typical of those who use health and social care services. **Exclusion:** Dementia diagnosis. **Unit of allocation:** Individual. **Total:** N=62. **Intervention:** Not reported **Comparator:** Not reported **Gender:** 54 out of 62 were women. **Mean age (range):** 67-93 years, average 82. 35% were aged 86-90 yrs. **SES:** Not reported.	**Baseline comparability:** Only intervention group **Attrition** **Number of participants completing study:** 21out of 62. **Reasons for non-completion:** 8 died, 6 because of illness or admission to residential care. 7 for other reasons. 34 could not make one or more panel meetings. **Process details** **Data collection methods:** Semi-structured and structured interviews. **Statistical methods:** Qualitative interviews. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** 3 interviews at 10 month intervals. **Mental well-being measure(s):** Interview comments. **Sample size calculation**: Not applicable	The analysis reports three key themes: personal development for the members, enhanced self-esteem and the empowerment of panel members and reduced social isolation through the opportunity for social contact and sharing experiences. Participants reported that they had more courage to 'voice their opinion'. However participants were less certain of their impact on services than the benefits of being involved in the panels. **Adverse effects:** Some participants felt that the panels did not have a practical effect on service provision or development. Some also said that they did not like to discuss their problems and that it could upset them.	The paper does not describe fully the analysis process and the ethical procedures adequately. **Applicability:** The intervention is likely to be applicable to similar populations or settings in the UK as panel user groups are already run across the UK in some local authorities.

Study Details	Intervention and population details	Analyses	Results	Comments
Barnicle & Midden, (2003). CBAS (quality rating –) **Objective:** What effect does a 7 week horticulture programme have on the psychological well-being of older people in a long-term care facility? **Recruitment:** Residents volunteered to be part of the horticulture activity programme. 31 participants selected from one residential facility served as the experimental group, 31 from another residential facility served as the controls. The control group were told that the horticultural programme would begin for them in 7 weeks. **Setting:** Indoors in the care facility at a table where residents could sit. **Country:** St. Louis, USA **Funding Source:** Not reported	The intervention is a horticulture activity programme. It took place indoors where the residents could sit. Three tiered plant stands were constructed out of PVC pipe to hold the plant material after each horticulture activity session. Grow lights were located on each tier. The plant stands were placed in an accessible area where residents could have passive and active contact with the plants throughout the week. **Providers/Deliverers:** Author of the paper. **Length:** 1 hour. **Duration:** 7 weeks. **Intensity:** 1 x week. **Comparator:** No intervention (wait list). **Population details** **Inclusion:** None reported. **Exclusion:** Not reported **Unit of allocation:** Individual. **Total:** N=62. **Intervention:** n = 31. **Comparator:** n = 31. **Gender:** 28 females and 3 males in both the control and experimental group (n=62). **Mean age (range):** Control m=87.71, experimental m=85.97. **SES:** none presented	**Baseline comparability:** No significant differences were found between the control group and the horticulture group on any of the demographic data (gender, race, marital status, religion, age, years residing in facility, gardening experience, type of care provided, avowed happiness, subjective health and pre-test psychological well-being score. **Attrition** **Number of participants completing study:** Not stated **Reasons for non-completion:** Not stated **Process details** **Data collection methods:** Primarily self report. The scale was administered verbally to any of the participants who could not fill out the assessment on their own. (*No figures reported for how many were assisted). **Statistical methods:** 2-way ANOVA. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Immediately post test. **Mental well-being measure(s):** Affect Balance Scale (ABS). **Power calculation:** Not presented.	There were no significant differences (F=0.70, p=.41) on the pre-test ABS score for the intervention group (m=5.42) and control group (m=4.29). There were no significant difference in the control ABS score pre-test (m=4.29) and post-test (m=3.00) or for the intervention group pre test (m=5.42) and post test (m=7.61). Comparison of mean ABS score between groups over the pre-test post-test period found that the intervention group had a significantly better ABS score (m=7.61) as compared to the control group (m=3.00; F=6.78, p=.01). No standard deviations or sample size of groups analysed are reported. Analysis of covariance is better method of analysing data with base;line imbalances **Adverse effects:** None reported	The authors suggest that careful consideration was given in choosing two facilities that had similar living environments and older adult populations. Nevertheless the fall in the ABS in controls could be the result of 'resentful demoralisation' The authors suggest that future research could assess if the beneficial effects of a horticulture programme last over a longer time period within this population. Future research could also include another therapy as a comparison group. **Applicability:** Simple horticultural activity programmes could be undertaken in similar populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Billipp. (2001) Randomised controlled trial (quality rating -) **Objective**: It was hypothesized that: 1. The amount of time spent interacting on a computer network would be positively correlated with change in self-esteem. 2. Interactive computer use would be associated with a change in self-esteem in elderly clients. **Recruitment:** Not stated **Setting**: Participants' homes **Country:** Not stated. Authors from Houston, Texas, USA **Funding Source**: US Videotel provided computer terminals for the study.	Participants assigned to computer groups were given a computer terminal for the duration of the study. Computer group I: Participants were limited to introductory, first-day computer training during the first weekly nurse visit. Computer group II: Participants received weekly nurse computer training throughout the study period. Computer Group III: First week computer training included the participant and a participant's significant other who then took over the nurse's role of computer trainer after the first visit. **Providers/Deliverers:** Registered nurses specialising in geriatrics. **Length**: The length of time spent in participants' home by nurses was not specified. Participants 'computer time' ranged from 0.32 hours to 50.39 hours over the 3-month period. **Duration**: 3 months **Intensity:** n/a **Comparator:** Control Group IV: Participants received weekly nurse visits but no computer terminal or computer training. **Population details** **Inclusion**: (1) lived in a private residence (2) were 65 years of age and older (3) had good vision and (4) had no previous computer experience. **Exclusion** none stated **Unit of allocation**: individual **Total** n = 40 **Intervention**: n = 10 in each group **Comparator** n = 10 **Gender**: 82% female, 18% male **Mean age (range):** M=73 **SES:** Some variation	**Baseline comparability:** No evidence presented regarding the balance of demographic characteristics at baseline. Pre-study test for equality of means indicated there were no significantly different pairs between groups in self-esteem at the onset of the study (Group 1 vs. IV: t=-0.19, p=0.85; Groups II vs. IV: t=-1.44, p=0.83; Groups III vs. IV: t=--0.23, p=0.82). Good reproducibility was indicated by a weighted Kappa statistic 0.53 with a 95% CI 0.31 to 0.75. **Attrition** **Not stated – a**nalysis was for four groups of 10. **Reasons for non-completion** None given **Process details** **Data collection methods** interview **Statistical methods** T-tests evaluated the self-esteem scale scores to check for equality by comparing group means. T-tests were used to determine if there were differences in computer time between training level Groups I, II and III. T-tests and Fischer Exact tests (after dichotomising scores) were used to investigate the association between training levels and pre-poststudy changes in self-esteem. After averaging the different compared training/control group variances to obtain a shared variance of compared training/control groups, an effect size was calculated for compared groups. Multiple regression tests analysed the strength of the relationship between self-esteem and different training methods. **Unit of analysis** individual **Unit of allocation:** individual **Time to follow up**: 3 months from start of study **Mental well-being measure(s):** The Rosenberg Self-Esteem Scale (Rosenberg 1965). **Power calculation**: unclear	A t-test comparing the difference of mean computer hours for lower esteem scores (improved self-esteem) versus higher self-esteem scores (decreased self-esteem) at the end of the study was not significant (p=.065). Noting that a negative score on the Rosenberg Self-Esteem Scale is in the direction of improved self-esteem, the -0.08 correlation between computer time and improved self-esteem indicated a positive but insignificant association (p=0.65). The many other statistical tests used lead to suspicion that the authors had no prospective analysis plan. **Adverse effects:** none	The size of the sample in each of the groups under examination is very small (n=10). This severely limits the findings of the study. There is also a risk of bias in the study. **Applicability:** The intervention is likely to be applicable across a broad range of populations and settings, assuming it is appropriately adapted.

Study Details	Intervention and population details	Analyses	Results	Comments
Bower & Greene (1995). Controlled non-randomised trial [NCT] **(quality rating -)** **Objective:** To investigate the effect of different types of activity on older adults in long term care facilities. **Recruitment:** Activity directors at 5 nursing homes identified people that they thought were appropriate to take part. **Setting:** Nursing home. **Country:** USA. **Funding Source:** Not reported but is a Masters dissertation project.	The intervention aimed to investigate the effect of different types of activity. This consisted of 3 condition groups: 1) making holiday baskets for families with special needs (described as altruistic activity) 2) non-altruistic activity with occupational therapy such as playing cards or crafts 3) conversation with occupational therapy. **Providers/Deliverers:** Occupational therapists. **Length:** 1 hour. **Duration:** 5 weeks. **Intensity:** Weekly. **Comparator:** 2 other groups with activity to compare with intervention group: group 2 = non-altruistic activity with OT such as playing cards or craft. Group 3 = conversation with OT. Control group undertook those activities in the nursing home that they normally would. **Population details** **Inclusion:** Those judged to be able to participate by activity directors. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** 32 (6 in the control that did not receive any intervention) rest randomised to three interventions. **Intervention:** Not reported. **Comparator:** Not reported. **Gender:** 26 female and 6 male. **Mean age (range):** Not reported but states participants are over 65 years. **SES:** Not reported.	**Baseline comparability:** No significant differences and randomised to each group. **Attrition** **Number of participants completing study:** N =32. **Reasons for non-completion:** Not relevant. **Process details** **Data collection methods:** Self-report. **Statistical methods:** Kruskal Wallis ANOVA. **Unit of analysis:** Individual. **Time to follow up:** Followed-up to end of intervention. **Mental well-being measure(s):** Revised Philadelphia Geriatric Center (PGC) Moral Scale **Power calculation:** Not reported.	A significant difference was found for attitude toward one's own aging comparing individuals in the altruistic condition to those in the non-altruistic condition. Older adults involved in the altruistic activity exhibited a more positive attitude than those in the non-altruistic condition (P = .022). However, the altruistic condition participants scored lower in positive attitude than participants in the conversational condition, whose scores indicated a significantly more positive attitude than those in the altruistic condition (P = .007) The altruistic group also scored significantly lower in attitude (P = .013) than those in the regularly scheduled group activity. There were no significant differences involving the altruistic group participants considering the PGC Morale Scale. The non-altruistic group scored significantly lower in attitude toward aging than participants in the conversational condition (P = .001) and those in the group activity condition (P = .003). Participants in the non-altruistic condition also scored significantly lower than those in the conversational (P= .013) and the group activity (P = .018) conditions in agitation. **Adverse effects:** None reported.	This study is too small and of a poor design.. **Applicability:** This is an American study and it is unclear whether the findings are applicable to populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Buijs et al. (2003). Qualitative (quality rating +) **Objective:** To evaluate the impact of an exercise and health promotion intervention; investigate programme processes that are not well understood such as participation, how the programme worked and to assess programme outcomes including quality of life. **Recruitment:** All seniors in the apartment buildings were given a letter inviting them to participate in the Seniors ALIVE programme. A programme co-ordinator spoke at regular tenants meetings where interested people could ask questions. 110 people registered interest in the programme. No details are provided as to the total number of people who lived in the apartments. A small thank you gift (<$5.00) was provided as an incentive to recruitment. **Setting:** 7 seniors' apartment buildings **Country:** Canada **Funding Source:** Not reported.	The paper evaluates the Senior Active Living in Vulnerable Elders (ALIVE) programme. It consists of a) exercise classes based on 'Fit for your Life' strength training program; b) health consultation drop-in discussions and health promotion newsletter. **Providers/Deliverers:** instructor **Length:** exercise classes 1 hour, consultation on average 5-10mins. Newsletter 7 over 10 months. **Duration:** 10 months **Intensity:** exercise classes bi weekly, individual consultations drop-in sessions held for 2 hours either weekly or bi-weekly. Newsletter 7 over 10 months. **Comparator:** None, although analysis compared with those that withdrew from the intervention. **Population details** **Inclusion:** If they lived in the building and were independent (also the participants volunteered). **Exclusion:** None reported. **Unit of allocation:** Individual. **Total:** 7 apartment buildings, within which 110 registered for the intervention. **Intervention:** n = 110. **Comparator:** No comparator. **Gender:** 8% male and 92% female. **Mean age (range):** mean age 76: range 57-94 yrs. **SES:** All low income participants.	**Baseline comparability:** N/A - single intervention group. **Attrition** **Number of participants completing study:** n=90/110 **Reasons for non-completion:** Mainly because of declines in ill health (often still attended the health consultations) or relocation. **Process details** **Data collection methods:** interview and focus group **Method of analysis:** Content analysis **Unit of analysis:** Individual **Time to follow up:** immediately after intervention **Mental well-being measure(s):** individual comments of well being **Power calculation:** Not applicable	The most frequently reported impact of the programme was reports of 'feeling better', and improvements in concentration and self-esteem. Staff also noted the positive mental impacts through their perceptions of increases in happiness to the participants. People reported being able to complete more ADL independently and easily. The social interaction in the intervention was important as it alleviated boredom and isolation. The most frequent factors influencing participation were perceived benefits, encouragement by others, a positive social programme atmosphere and having fun. Barriers were other priorities, deteriorating health and forgetting to come. Changes to session times or staff also affected participation. 85% demonstrated existing levels of efficacy before the programme, as they were confident about doing the exercises prior to attending the class. Importantly the same percentage reported being physically active in their younger years. **Adverse effects:** The formation of cliques within the resident population had the potential to cause social inclusion problems for residents within and outside of the intervention. Also, some participants found the termination of the intervention difficult to deal with.	The sample was biased in favour of women. The data could have been analysed in more depth. The use of more than one intervention was beneficial in addressing differing needs. Health problems meant that at times some people could not attend the exercise classes, but they could still attend the health corners. On the other hand it is difficult to ascertain which of the 3 components of the programme might have the strongest effect. **Applicability:** Likely to be applicable among similar populations and settings in the UK if appropriately adapted, as it is has been used within a Western Culture.

Study Details	Intervention and population details	Analyses	Results	Comments
Butler (2006). Mixed method study – retrospective design [MM] (quality rating -) **Objective:** To evaluate the impact of a Senior Companion Programme (volunteer programme) on volunteers and the people they assist. The overarching aim of the paper was to develop an assessment tool for evaluating such programmes. **Recruitment:** All those volunteers in the program in Washington County participated, a convenience sample of clients also participated. No further information given. **Setting:** Community based volunteering program to help older adults in the home. **Country:** Washington County, Maine, USA. **Funding Source:** Grant from the Hartford Geriatric Social Work Faculty Scholars Program.	The Senior Companion Programme runs federally across the US, with a program in each state but not each county. The program provides volunteering opportunities for low socio-economic group older adults to help meet the unmet needs of older adults in the community. This may be companionship, driving to places, assisting with tasks, respite care etc. A stipend of $2.65 per hour is given to the volunteer who typically undertakes 15-20 hours volunteering a week. **Providers/Deliverers:** Federal Senior Companions Program. **Length:** Unlimited **Duration:** Unlimited **Intensity:** N/A **Comparator:** No comparators. **Population details** **Inclusion:** Those people already involved in the program. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** n = 66 individuals - 34 volunteers and 32 clients. **Intervention:** Not reported **Comparator:** Not reported **Gender:** 54 (81.8%) female and 12 (18.2%) male. **Mean age (range):** Range 62-99. Mean = 78 years. **SES:** The volunteers are only eligible for the program if they have incomes of 125% of the poverty line and below. Although the clients have no such economic eligibility criteria they also tended to be impoverished with a monthly median of $7,806, well-below the poverty-line.	**Baseline comparability:** Only one intervention group, no control, so no balancing required. Also no baseline measures taken. **Attrition** **Number of participants completing study:** 66, 34 volunteers and 32 clients. **Reasons for non-completion:** Not relevant. **Process details** **Data collection methods:** Face-to-face interviews with self-report measurements. **Methods:** Thematic analysis using the open coding procedure of Strauss and Corbin (1998). **Unit of analysis:** Individual. **Mental well-being measure(s):** N/A **Power calculation:** Not reported.	Qualitative findings: four themes from question to the clients 'What has it meant to you to have a volunteer? Companionship (13/28 reported this), increased independence (11/28), something to look forward to and a bright spot to the day (7/28) and reduced anxiety knowing they could rely on the volunteer (5/28). Only one client said that they was something that they did not like about the scheme, and that was a lack of flexibility in delivery, although when, what and how the service is delivered is negotiated between the client and volunteer. Volunteers were asked 'what do you like best about your role?'. Four themes emerged again. 15/34 said that they liked what they could give to their clients in their role. The rewards of the role was mentioned by 15/34. Companionship for the volunteer was given by 14/34 and 9/34 said that they liked that it kept them active. More volunteers than clients said there was something that they did not like about volunteering. This was mainly the upset when a client died or watching them be in pain (10/34). Other reasons were challenging clients (6/34). 5/34 reported that they pushed themselves too much at times, making their own health deteriorate. **Adverse effects:** Some participants felt sad and upset if one of their clients died or if they were in pain. However, this was generally outweighed by the positives.	No inferences about effectiveness can be drawn from the quantitative findings as they are only taken at one time point and the sample size is too small. Therefore the quantitative findings are not presented. The qualitative findings were largely positive towards the programme. **Applicability:** The volunteering programme could be transferred to the UK and similar programmes are currently implemented by groups such as Age Concern and Help the Aged

Study Details	Intervention and population details	Analyses	Results	Comments
Clark et al. (1997). RCT (Quality rating ++) **Objective:** To evaluate the short-term effectiveness of preventative occupational therapy (OT) specifically targeted for urban, multi-ethnic independent living older adults. **Recruitment:** Subjects were recruited from a government subsidised apartment block for independent living seniors in Los Angeles, from residents in private homes or other facilities in the surrounding area who used the block's facilities, and from another government subsidised apartment block in California. Subjects were recruited using staffed recruitment tables placed in facility lobbies at functions, flyers, articles in the resident's newsletter, presentations at the senior citizens club and letters placed under doors. **Setting:** Unclear, but they attended sessions **Country:** USA **Funding Source:** National Institute on Aging	The intervention involved group activity sessions to promote positive changes in lifestyle. Topics included health behaviours, transportation, personal safety, social relationships, cultural awareness and finances. The intervention was expected to improve specific health practices and increase the general sense of purpose and meaning via engaging in meaningful activity **Providers/Deliverers:** Registered occupational therapists. **Length:** OT group - 2hrs per week of group OT, and 9 hours of individual OT. Social group - 2.25 hours per week **Duration:** 9 months **Intensity:** Not reported **Comparator:** Two comparator groups were considered 1) a social activity control group, who undertook activity sessions including craft, films, outings, games, dances. 2) a no treatment control group **Population details** **Inclusion:** Independent living, culturally diverse men and women, aged 60 years and over. **Exclusion:** Unable to live independently or if they exhibited marked dementia. **Unit of allocation:** Individual **Total:** n = 3161 **Intervention:** n = 122 (OT) **Comparator:** n = 120 (social); n = 119 (control) **Gender:** 65% female **Mean age (range):** 74.4, S.D. = 7.4. **SES:** Not reported	**Baseline comparability:** There were no differences in demographic characteristics or medical history. **Attrition** **Number of participants completing study:** 84% in the OT group, 83% in the social group, 87% in the control group. **Reasons for non-completion:** 8 died, 3 became ill, 18 relocated, 11 were unavailable for post testing, 20 lost. **Process details** **Data collection methods:** Self report **Statistical methods:** ANOVA, ANCOVA **Unit of analysis:** Individual **Time to follow up:** Tested at baseline and after the 9 month programme. **Mental well-being measure(s):** Life Satisfaction Index Z SF-36 **Power calculation:** Assuming a 20% attrition of subjects over 9 months and conducting testing of hypotheses at the .05 level (1-tailed), a projected sample size of 360 (with a 2:1 allocation ratio) permitted a degree of power equal to 80% in detecting a moderate population effect size (> or equal to .030 attributable to the OT treatment. For the SF-36, which was administered to the second cohort, a projected sample size of 220 permitted 80% power in detecting a population effect size of 0.4 or greater.	ANCOVA found a significant benefit attributable to OT treatment for life satisfaction (p=.03); OT condition (n=102) life satisfaction pre M=17.5, S.D.=5.9; post M=18.8, 5.3, mean change=1.3, S.E.=0.4; control (n=203) life satisfaction pre M=16.4, S.D.=6.1; post M=17.3, S.D.=5.9, mean change=0.9, S.E.=.03. ANCOVA found a significant changes for the SF-36 mental health factor (p=.03); the OT condition remained relatively stable (n=48) pre m=84.4, S.D.=15.5, post M=83.5, S.D.=12.7, change =-0.9 (2.5), whereas the control group declined (n=111) pre M=78.3, S.D.=20.7, post m=74.7, S.D.=18.4, change=-3.6 (1.7) Analyses of outcomes in the OT group found that compared with other ethnic groups Asians (non-Mandarin speaking) showed greater improvement measured by the Life satisfaction Index (no figures reported). **Adverse effects:** There is a decline in the SF-36 mental health score for the controls, yet one of these groups received an 'activity only' intervention. However it is difficult to ascertain the negative effect of this aspect alone as the results are pooled.	A limitation is that the results may not generalise to older adults in different living situations (i.e. single-family dwellers, nursing home residents). A strength is that the results can be generalised to older adults of varying ethnicities. **Applicability:** Although conducted in the USA the intervention is likely to be applicable to older adults residing in a similar living situation, such as sheltered housing.

Study Details	Intervention and population details	Analyses	Results	Comments
Clark et al. (2001). RCT (Quality rating ++ from 1997 paper) **Objective:** To evaluate the medium-term effectiveness of preventative occupational therapy intended to reduce health-related declines among urban, multi-ethnic, independent-living older adults. **Recruitment:** Independently living participants aged 60+ were recruited from two federally subsidized apartment complexes for older adults. 361 recruited. **Setting:** Group therapy activity. **Country:** Los Angeles, USA. **Funding Source:** Grant R01 AG-11810 from National Institute on Aging, National Centre for Medical Rehabilitation Research and Agency for Health Care Policy & Research. Research also American Occupational Therapy foundation Centre at University of Southern California for Study of Occupation and its Relation to Adaptation, RGK Foundation, Lumex Inc & Smith & Nephew.	Intervention: Group activity sessions to promote positive changes in lifestyle. Topics included health behaviours, transportation, personal safety, social relationships, cultural awareness and finances. The intervention was expected to improve specific health practices and increase the general sense of purpose and meaning via engaging in meaningful activity. **Providers/Deliverers:** Occupational therapists **Length:** Not reported **Duration:** 9 months **Intensity:** Weekly **Comparator:** Two comparator groups were considered 1) a social activity control group, who undertook activity sessions including craft, films, outings, games, dances. 2) a no treatment control group **Population details** **Inclusion:** independent living over 60 yrs **Exclusion:** Unable to live independently, marked dementia **Unit of allocation:** Individual **Total:** N=361 were recruited. The paper reports figures for analysed numbers after drop outs were subtracted – (Intervention group N=96 both control conditions N=189). **Intervention**: N=96 **Comparator:** N=189 **Gender:** 67% female, 33% male **Mean age (range):** mean = 74.4 SD ± 7.4 yrs 60-≤ 80yrs At long term follow up the age distribution was <70 years old (26%), 70-79 years old (51%), >/= 80 years old (23%). **SES:** not reported	**Baseline comparability:** Measured on SF-36 and LSI-Z but comparability not reported. **Attrition** **Number of participants completing study:** Total N (IV and controls) =285 (79%) **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Self report **Statistical methods:** ANCOVA **Unit of analysis:** Individual **Time to follow up:** At the conclusion of the treatment phase and at 6 month follow up (the latter is reported in this paper). **Mental well-being measure(s):** Life Satisfaction Index-Z SF36 **Power calculation:** **See Clark et al. (1997)**	The post test results reported in this paper are for the 6 month interval post treatment (when no intervention was administered). Life Satisfaction did not change over time IV (n=96), pre-test (m=17.6, S.D.=5.8), post test m=18.6, S.D.=5.8, mean change=1.2, S.D.=0.5, p=.23; control life satisfaction (n=188)pre-test m=16.4, S.D.=6.1, post-test m=17.3, S.D.=6.3, mean change =0.8 (0.3). There were significant between group differences (p=.02) for the SF36 mental health factor. For the OT group scores remained relatively stable from pre-test m=84.5, S.D. =15.6, to post test m=83.1 S.D. =13.4, adjusted change =0.6 (2.1). In contrast the control group declined from pre-test m=78.1, S.D. =21.1 to post test m=74.3, S.D. =18.6, adjusted change =-4.9 (1.4). **Adverse effects:** None reported	Although the methodological details are not fully reported in this paper, hence the low quality coding, the sample is the same as that fully reported in Clark et al. (1997, RCT++). Therefore the results are extremely useful. There were stronger effects for the psychosocial (as opposed to physical) outcome measures. The authors suggest that it is not activity per se that increases well-being, but the connection with the character of the intervention, activity that is personally meaningful and relative to everyday life. In future the authors suggest longer follow-up times, and to evaluate the efficacy of OT with different populations, treatment settings. **Applicability:** Likely to be applicable across a broad range of populations and settings, assuming it is appropriately adapted.

Study Details	Intervention and population details	Analyses	Results	Comments
Clark et al. (2003). Single group before and after study (UBAS) (Quality rating –) **Objective**: To present the 1 year outcomes of a practical, real-world exercise intervention among lower income, urban primary care patients. **Recruitment:** 860 older primary care patients were randomly selected from the Medical Records System. Enrolment was stopped after 500 (58%) of the 860 had had a visit at one or the two health participating health centres.412 (82%) of the 500 were considered eligible to participate. Of these 123 (30%) agreed to participate. At follow up, mental health data was available for 72 participants. **Setting**: Community buildings (church and community centre). **Country:** Indiana, USA. **Funding Source**: Not reported.	The intervention consisted of free, moderate intensity exercise classes consisting of 20 minutes of chair-based or standing leg and arm movements and up to 30 minutes of indoor walking during every class. For those unable or who had great difficulty walking this was replaced with 20 minutes of upper and lower body resistance training using Therabands. **Providers/ Deliverers:** Study personnel. **Length**: 50 minutes. **Duration**: 1 year. **Intensity:** The authors encouraged the participants to attend 3 classes per week. **Comparator:** There is no comparison group, but the results are analysed by extent of adherence to the exercise programme. (No adherence; low adherence; moderate adherence). **Population details** **Inclusion**: Female aged 50+. Participants were also considered eligible for inclusion by their provider. The authors conducted a further exercise test. **Exclusion:** Not reported. **Unit of allocation**: Individual. **Total:** n=123. **Intervention**: n=123. **Comparator:** No comparator. **Gender**: All female. **Mean age (range):** M = 63.7 **SES:** Not stated even though authors refer to lower income patients as being the focus of the study.	**Baseline comparability:** No comparator group. **Attrition** **Number of participants completing study:** 72 out of the 123 (58%). **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Self-report. **Statistical methods:** t-tests, ANOVA. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up**: End of study. **Mental well-being measure(s):** The Mental Health Index (MHI-5; McCabe, Thomas, Brazier & Coleman, 1996). *the reference suggests this is the SF-36. **Power calculation**: Not reported.	There were no significant differences between the 3 adherence groups for mental health at baseline and at the 1 year follow up. Group 1- 1 year mean change = .10, sd = 4.21, p = .736. Group 2 - 1 year mean change = -2.40, sd = 4.91, p = .180. Group 3 - 1 year mean change = -1.06, sd = 2.88, p = .092. (Note: the study found positive effects for physical measures that are not the remit of this review). **Adverse effects:** None reported	The authors flag up a number of limitations - the study population is taken from one that chose to be part of a specific health care system; the number of participants in each exercise adherence group is quite small; not an RCT. **Applicability:** The findings from the study are limited to the relatively small proportion of eligible participants that chose to take part.

Study Details	Intervention and population details	Analyses	Results	Comments
Cochrane, Munro, Davey, & Nicholl (1998). Controlled before and after trial - **Objective**: Community-based intervention to test whether regular physical activities for predominantly sedentary older people lead to improvements in physical function that may ultimately lead to lower costs for the health care of older people. **Recruitment:** Letter sent to all (specified single) GP registered patients (507), 438 (86%) responded, 420 (83%) usable. 18% of 420 were excluded. Remaining 345 invited to participate: 64 (18.3) agreed. **Setting**: Community buildings **Country:** Sheffield, UK **Funding Source**: NHS Research and Development Programme on cardiovascular disease and stroke	The intervention is a community based exercise programme that includes elements of cardiovascular activity, mobility, flexibility, muscle strength, balance and co-ordination. **Providers/Deliverers:** exercise leader **Length**: 75 minutes **Duration**: 10 weeks **Intensity:** 1-2 sessions per week, average participation 1.4 sessions **Comparator:** Between control group and intervention group and measures at baseline and at follow-up. Control group asked to complete SF-36 and physical activity questionnaires. **Population details** **Inclusion**: patients from specific GP practice over 65 years and classed as sedentary **Exclusion** physically active, e.g undertaking 30 minutes brisk walking a day. **Unit of allocation**: individual **Total** n= 110 **Intervention**: n =55 **Comparator** n = 55 **Gender**: Intervention group before drop out= 20 males and 35 females, control group after drop out = 13 males and 18 females. **Mean age (range):** Intervention group mean age 74.4 years (sd 6.19), control group mean age 73.4 years (sd 5.9). **SES:** Not reported	**Baseline comparability:** Yes, matched by physical activity, age, sex. No statistically significant differences in baseline measures. **Attrition** **Number of participants completing study** 42 (76%) exercise intervention group and 31 (56%) control group. **Reasons for non-completion** Not reported **Process details** **Data collection methods** Postal questionnaire **Statistical methods** Pre- and post-intervention group means were compared using the paired-t test or the sign test where appropriate. Exercise and control group comparisons used either the independent t-test or the Mann-Whitney test as appropriate. Differences were considered statistically significant at the p=0.05 level. **Unit of analysis** Individual **Unit of allocation:** individual **Time to follow up**: 10 weeks from start of intervention to end of intervention. **Mental well-being measure(s):** Mental Health scores from SF-36 **Power calculation**: Effect sizes were calculated as: ES = mean change/ SD before intervention. An ES size of greater than 0.8 is large and 0.5 moderate and less than 0.2 small.	The SF-36 mental health factor was significantly improved in the exercise group - mean change = 7.3 ($p<0.05$) 95% CI 2.0-12.6, effect size 0.39. There was a non-significant decline in the mental health of the control group; mean change -3.7, 95% CI -8.4-+1, no effect size calculated as mean change is not significant. At baseline IV M=72.6 (17.9), control M=68.7 (23.4). **Adverse effects:** 1 dropped out on advice of researchers because of minor adverse effect - feeling faint through over-exhaustion.	There is a lower than desired n for follow up (76% of exercisers and 56% of controls) and no reliabilities of measurement are reported. The paper lacks significant methodological details. The paper does not adequately report where the control sample were drawn from. **Applicability:** This is an English study and directly applicable to populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Collins & Benedict (2006). Single group before and after study - **Objective**: To evaluate the effectiveness of the Seniors CAN educational intervention among 339 older adults. **Recruitment:** Participants were recruited through newsletters and promotional flyers. **Setting**: Senior centres and senior housing developments **Country:** Nevada, USA **Funding Source**: Not stated	The intervention was an educational health promotion intervention. It included 15 sessions on topics such as nutrition and food, personal safety, financial strategies, general wellness and productive ageing. Lessons were taught using an interactive style to encourage participation. **Providers/Deliverers:** Co-operative extension paraprofessionals (*not described in any detail as to what these are), volunteer peer educators and on-site staff. **Length**: Not stated **Duration**: 16 weeks **Intensity:** 15 lessons **Comparator:** None **Population details** **Inclusion**: none stated **Exclusion:** none stated **Unit of allocation**: individual **Total**: 339 **Intervention**: 339 **Comparator no** comparison group **Gender**: 80% female **Mean age (range):** between 52 and 93 (m=73.20, sd=8.64) **SES:** 70% reported an income of less than $19,000 per year with 35% under $9,000. Twenty percent reported an income between $20,000 and $39,000 per year, and 9% had incomes that exceeded $40,000 a year.	**Baseline comparability:** Not relevant **Attrition** **Number of participants completing study:** 339 **Reasons for non-completion** none **Process details** **Data collection methods** Self-report **Statistical methods** T-tests **Unit of analysis** Individual **Time to follow up**: Not stated **Mental well-being measure(s):** The Mastery Scale (Pearlin) **Power calculation**: The study was powered to detect an effect 'if one existed', but no explicit power calculation given.	Mastery increased from a mean score of 24.96, sd=.28, to 27.01, sd=.25 (t=12.08, df=323, p<.001). **Adverse effects:** none	The authors state that the intervention improved a person's sense of control, but they did not examine this construct. Strength - the preliminary findings add to the body of research that suggests that factors related to improved health and higher quality of life for older adults can be enhanced by education. Weakness-The sample population was self selected and included only those who completed the pre test and post test. The design lacked a control group, assessed only short term improvements and did not account for the pre-test itself as a confounding factor. **Applicability:** Although conducted in the USA it is likely that the intervention could be adapted for similar populations and settings (day centres, retirement communities and sheltered housing schemes) in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Colombo et al. (2006). Controlled non-randomised trial - **Objective:** Does a pet therapy programme have a favourable effect on psychopathological status and perception of quality of life in cognitively intact institutionalised elderly? **Recruitment:** Nursing homes from the Veneto Region of Italy were invited to take part in the project **Setting:** Nursing homes of the participants **Country:** Veneto region of Northern Italy **Funding Source:** Not reported	Each participant was given a canary to look after for 3 months **Providers/Deliverers:** n/a **Length:** n/a **Duration:** 3 months **Intensity:** n/a **Comparator:** Participants in the comparator group were given a pot plant to look after for 3 months (comparator). The control group were given nothing to look after (control). **Population details** **Inclusion:** Not reported **Exclusion:** Major somatic deterioration (non-autonomous elderly), scores of less than 21/30 on the MMSE. **Unit of allocation:** Individual **Total:** 43 plant (comparator); 53 control; 48 canary (IV). N = 144 total. **Intervention:** Each participant was given a canary to look after for 3 months **Comparator:** Participants in the comparator group were given a pot plant to look after for 3 months (comparator). The control group were given nothing to look after (control). **Gender:** plant 81%F; control 60% F; canary 62% F. Overall 32% M; 68% F **Mean age (range):** mean 78.4+/- 9.4 **SES:** Not reported.	**Baseline comparability:** The groups were balanced on age and educational level, and the baseline outcome measures of the LEIPAD-SV scales. **Attrition** **Number of participants completing study:** Not reported. **Reasons for non-completion:** 22 refused to participate **Process details** **Data collection methods:** Baseline interviews performed by two psychologists. At 3 month data collection tests were re-administered **Statistical methods:** Compared by means, student's t test, chi square and ANOVA **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** 3 months **Mental well-being measure(s):** LEIPAD II Short version (LEIPAD SV) 25 items divided into 6 subscales, including depression and anxiety scale (DAS), Cognitive functioning scale (CFS), Social functioning scale (SFS), and Life Satisfaction Scale (LSS) designed to gauge subjective perception of quality of life in the elderly. **Power calculation:** Not reported.	There were no differences between the groups for the life satisfaction sub-scale at baseline (plant m=6.53, sd=2.17; control m=6.37, sd=2.41; animal m=6.12 sd=1.93). At follow up the pet therapy group appeared to show the most improvement in life satisfaction (m=4.50, sd=2.08) compared with the plant group (m=6.51, sd=2.26) and control group (m=6.42, sd=2.59) (p<.001, full analysis results not reported, low scores = better functioning). The pet therapy group also scored significantly better on life satisfaction over time (p<.01, full results not reported) whereas the control and plant groups showed no significant improvement. **Adverse effects:** None reported.	There is potential confounding due to the extra attention paid to the IV group, as vets visited their apartment to check on the health of the canaries. There is no information regarding the validity of the LEIPAD-SV. A strength is the findings corroborate previous findings. A weakness is the potential confounding attention affect due to vet visitations. **Applicability:** The interventions could be undertaken in the UK. However this study was conducted in Italy and it is unclear how comparable residential care is to the UK. The findings may only be applicable to populations and settings included in the study.

Study Details	Intervention and population details	Analyses	Results	Comments
Cusack et al. (2003) Before and after study with no control group - **Objective**: Is a mental fitness program effective in increasing mental well being in over 50s who want to improve their mental abilities? **Recruitment:** People who enrolled in the Mental Fitness for Life programme (Lacks further details). **Setting**: Workshops, not reported where these are based. **Country:** Not reported, but program began from a project in Western Canada. **Funding Source**: Not reported	8 week series of intensive workshops based on learning how ageist attitudes and beliefs about declining mental abilities restrict their potential for a ital healthy old age. The program was grounded in research that includes the topics: Goal setting, critical thinking, creativity, positive mental attitude, learning, memory, and speaking your mind. Activities also include puzzles, quizzes, assignments and provocative dialogue and debate. **Providers/Deliverers:** not reported **Length**: not reported **Duration**: 8 weeks **Intensity:** not reported **Comparator:** no control group **Population details** **Inclusion**: Aged over 50; wanting to improve their mental abilities. **Exclusion** none reported **Unit of allocation**: individual **Total** n = 22 **Intervention**: n = 22 **Comparator** n/a **Gender**: 1 male and 21 female **Mean age (range):** 50-84, M = 68 **SES:** not reported	**Baseline comparability:** n/a **Attrition** **Number of participants completing study** 18/22 (81%) **Reasons for non-completion** None reported **Process details** **Data collection methods** Self-report **Statistical methods** Descriptive statistics, t tests. **Unit of analysis** Individual **Time to follow up**: Immediately after intervention. **Mental well-being measure(s):** Rosenberg Self-Esteem scale. . **Power calculation**: none	There were no significant differences in self esteem between pre- and post-test scores. (Pre-test mean = 32.47, post-test mean = 34.27), **Adverse effects:** none	Poor reporting of research process. No control group. **Applicability:** Applicability to the UK is unclear due to the lack of details about the intervention and the study in general.

Study Details	Intervention and population details	Analyses	Results	Comments
Damush & Damush (1999). Controlled non-randomised trial - **Objective:** To evaluate prospectively the impact of an accessible, strength training programme on overall improvements in health, functioning, and well-being as well as strength among older adult women. **Recruitment:** Women were recruited from two retirement (single-home dwellings) communities in Southern California through a media based promotion. 71 expressed an interest, 62 completed. **Setting:** Strength facilities in the retirement residential communities (Would suggest this is a gym). **Country:** Southern California, USA. **Funding Source:** Fitness Wholesale and the Hygenics Corporation. Partial support was provided by the University of California, Riverside Graduate Dean's Dissertation Research Grant.	A resistance training intervention using elastic bands. The exercisers sat in folded chairs and the control group monitored the exercisers. Participants were encouraged to progress the degree of resistance. **Providers/Deliverers:** The classes were led by an American College of Sports Medicine and American Senior Fitness Medicine certified and degree instructor. **Length:** 45 minutes. **Duration:** 8 weeks. **Intensity:** Twice a week. **Comparator:** Wait list control group - the control group also attended the classes as the researchers wanted to control for the effect of socialisation on outcomes. Thus both groups both received the same degree of social activity. **Population details** **Inclusion:** None stated. **Exclusion:** None stated. **Unit of allocation:** Individual. **Total:** n = 71. 40 intervention, 31 controls. **Intervention:** n = 40. **Comparator:** n = 31. **Gender:** All female. **Mean age (range):** 68 (sd = 5.58). **SES:** 13% had household income <$20,000, 66% $20,000-$39,000, 21% >$40,000.	**Baseline comparability:** At baseline the groups did not differ significantly on the strength measures, self reported physical activity, age, income, education level, number of chronic conditions, marital status or retirement status. **Attrition** **Number of participants completing study:** Total n = 62; n=33 intervention, n=29 controls. **Reasons for non-completion:** In the intervention group 6 became ill and one moved. In the control group 1 moved and 1 did not provide a reason. **Process details** **Data collection methods:** Not stated - used a questionnaire. **Statistical methods:** T-tests and ANOVA. **Unit of analysis:** Individual. **Time to follow up:** End of intervention. **Mental well-being measure(s):** The Mental Health Functioning Index from the SF-36. **Power calculation:** None reported.	After adjusting for co-variates, the exercise group's change in mental health function (F1,61=.31, p>.10, effect size =.10), did not differ significantly from the control group after 8 weeks of strength training **Adverse effects:** None reported.	There is a high risk of bias in this study. The control group (who attended the classes but did not exercise) also improved in their mental health score (although there was no significant difference between exercise and control). The authors suggest that attending a scheduled, peer group activity outside the home may have a positive effect on mental well-being - the socialisation aspect is important. The authors suggest that future studies of stretch band interventions should be tested in populations with specific health conditions to determine the generalisability of the effectiveness of the bands, and in programmes of longer duration. **Applicability:** Although conducted in the USA the intervention is likely to be applicable to similar populations in the UK. However there are likely to be differences regarding the settings as in the UK retirement/specialised housing do not routinely have gyms..

Study Details	Intervention and population details	Analyses	Results	Comments
Doric-Henry (1997). CBA – **Objective:** Evaluation of a pottery intervention as art therapy on outcomes of self-esteem, independence and well-being. **Recruitment:** All residents were invited to participate - leaflets were handed out. No details are provided as to the initial number contacted. 40 people in total participated. **Setting:** Residential nursing home **Country:** Michigan, U.S. **Funding Source:** Not reported.	Pottery classes taking the participants through the entire process of wedging, throwing, drying, trimming, bisque-firing, glazing, and flaze firing. Resulted in participants having completed at least one piece of work. **Providers/Deliverers:** The author of the paper **Length:** 1 hour **Duration:** 8 weeks **Intensity:** weekly **Comparator:** Control group from same facility receiving no class. **Population details** **Inclusion:** Willingness to participate, physical and emotional health state allows for participation **Exclusion:** None reported **Unit of allocation:** Individual. **Total:** N = 40. **Intervention:** n = 20 participants. **Comparator:** n = 20 controls. **Gender:** IV: 19 female and 1 male. Control: 16 female and 4 male. **Mean age (range):** IV: 50-95 average 83.5. Control: 6-99, average 85.9. **SES:** Not reported.	**Baseline comparability:** No statistical difference between groups, other than anxiety levels, the control group were significantly higher **Attrition** **Number of participants completing study:** 100% **Reasons for non-completion:** Not relevant **Process details** **Data collection methods:** Interview and questionnaire **Statistical methods:** A matched sample t-test was used to compare the pre-test and post-test differences of means on each of the dependent variables for both the intervention groups and the comparison group. **Unit of analysis:** Individual **Time to follow up:** Immediately after intervention **Mental well-being measure(s):** Self esteem measured using the adult form of the Coopersmith Self-Esteem Inventory. **Power calculation:** Not reported.	For the intervention group self esteem improved ($p<.05$) from pre-test m= 72 (sd=13.9) to post-test m= 81.6 (sd =8.4).There was no improvement in self esteem for the control group pre-test m= 70.8, sd 14.0), post-test m= 69.8 (sd 15.3). Post hoc analysis found that comparing a sub-group with high levels of self esteem (n=10) pre-test with a sub-group with low levels of esteem (n=10) found that those with initial high levels of esteem showed no improvement, whereas the group with low esteem showed significant improvement (No means or standard deviations reported, small N in each group for such tests). **Adverse effects:** None reported.	Lack of a control for other activity (i.e. the effect of spending time with the participant). The sub-group analysis (for high and low esteem) is not outlined in the introduction and method section, and appears to be a fishing trip to find significance. The sample sizes are low for parametric analysis. Too small a sample. Transferable and culturally appropriate intervention. **Applicability:** Although conducted in the USA the intervention is likely to be applicable to populations and settings in the UK, as many residential and nursing homes in the UK are developing similar leisure programmes for clients.

Study Details	Intervention and population details	Analyses	Results	Comments
Dubbert et al. (2002). Controlled non-randomised trial - **Objective:** To evaluate the effects over 1 year of three levels of follow-up telephone contacts on adherence to a walking for exercise programme in elderly patients who had initially received individualised nurse counselling at a clinic visit. **Recruitment:** Potentially eligible patients were identified by review of medical records prior to scheduled visits with co-operating primary care providers. A letter was mailed to these potential participants. Those who expressed an interest were contacted by a research nurse. **Setting:** Own home (to participants own telephone). **Country:** USA. **Funding Source:** Department of Veterans Affairs Health Services Research and Development Service.	Individualised counselling provided by a nurse. All of the participants viewed a motivational walking/exercise safety video that portrayed older men and women walking in various settings. Participants then set individualised goals for a home based walking programme in discussion with the nurse and wrote a walking plan. They all kept a weekly walking diary. They were then randomly assigned to 3 conditions. 1 = included 20 personal phone calls over 12 months; 2 included 10 personal phone calls interspersed with automated phone calls that delivered a recorded message by the nurse; 3 = no phone contacts. **Providers/Deliverers:** Nurse researcher. **Length:** Condition 1 = 20 phone calls; condition 2 = 10 phone calls and 10 automated calls. **Duration:** 2 months. **Intensity:** 5 minutes per call. **Comparator:** Between and within the 3 groups. **Population details** **Inclusion:** 60-80 years old, enrolled in a primary care clinic, non-institutional and independent in activities of daily living; stable health, willing to increase walking for exercise and attend research clinic visits, satisfactory performance on a 6 minute walking test. **Exclusion:** Patients already walking for exercise at least 20 minutes a day at least twice a week were excluded. **Unit of allocation:** Individual. **Total:** Condition 1 n=69; condition 2 n=73; condition 3 n=70. **Intervention:** **Comparator:** **Gender:** 179 male 2 females **Mean age (range):** 68.7 **SES:** 8.8% of the sample were in financial hardship (no further description provided).	**Baseline comparability:** The authors state that there was no difference in participant characteristics between the 3 treatment groups. **Attrition** **Number of participants completing study:** 85% **Reasons for non-completion:** 11 failed to return to the clinic; 14 experienced illness or accidents; 6 withdrew. **Process details** **Data collection methods:** self report **Statistical methods:** ANOVA **Unit of analysis:** Individual **Time to follow up:** Not reported **Mental well-being measure(s):** SF-36 **Power calculation:** Not reported	The authors report that there were no changes in the mental health summary score and no means and standard deviations are reported. There was a non-significant change (m=-1.71, sd=10.79) from baseline to 12 month follow up for the SF-36 mental component summary score. (There were positive effects of the intervention on physical measures that are not within the remit of this review). **Adverse effects:** None reported	The paper lacks methodological details. It appears that the main focus of the paper is on physical and health outcomes. **Applicability:** Walking is a low impact activity that requires little financial outlay or baseline fitness. Consequently although conducted in the USA the intervention is likely to be applicable to similar populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Dungan et al. (1996) Single group before and after study - **Objective:** To measure selected physical and mental outcomes in order to evaluate the specific level of multi-disciplinary intervention, or provider dose, offered by the health maintenance programme. **Recruitment:** Participants are a convenience sample recruited via flyers distributed around housing projects and through personal recruitment by the research team. **Setting:** Not clear. Participants attended classes. **Country:** Honolulu, Hawaii. **Funding Source:** Funded by the Executive Office on Ageing, Office of the Governor and the Elderly Affairs division of the city and county of Honolulu.	The Health Maintenance Programme is a group intervention. It includes therapeutic exercise, self-help support groups that included educational and group counselling sessions. Easy accessibility was an essential feature of the programme and group meetings were held in housing where most of the participants resided. **Providers/Deliverers:** Therapeutic exercise was delivered by a physical therapist or trained exercise leader; self help support groups led by nurses, social workers or trained group leaders. **Length:** 1.5 hour. **Duration:** 6 months. **Intensity:** 3 meetings a week. **Comparator:** None **Population details** **Inclusion:** A physician authorisation form was used to attest that subjects were medically able to participate in the programme. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** n=59. **Intervention:** n = 59. **Comparator:** No comparator. **Gender:** 34% male and 66% female. **Mean age (range):** Age ranged from 61to 93 with a mean of 74 (sd=7.7). **SES:** Not stated.	**Baseline comparability:** Not applicable **Attrition** **Number of participants completing study:** 44 (74%). **Reasons for non-completion:** 15 did not complete the programme or missed a substantial number of sessions and so were dropped from the study. Two of the younger participants dropped out because the group did not challenge them sufficiently. 10 had increasing frailty or acute illness. **Process details** **Data collection methods:** Self report. **Statistical methods:** Repeated measures t-tests. **Unit of analysis:** Individual. **Time to follow up:** 6 months. **Mental well-being measure(s):** Life Satisfaction Index A (Havinghurst et al.) Life Satisfaction Visual Analogue Scale, Self esteem Visual analogue scale (developed for this study?). **Power calculation:** Not reported.	There was no significant improvement in the LSI-A score from pre (m=10.3) to post (10.5) (No sd's are reported). There was a significant improvement on the visual analogue scale for life satisfaction (t=4.6, df=40, p<.001) from m=61, sd=24 pre-test to m=80 sd=26 post test. There was a significant improvement on the self esteem visual analogue scale (t=3.3, df=40, p=0.002) from m=68, sd=24 pre test to m=82 sd=28 post test. **Adverse effects:** None reported	The author's explanation of the improvements for the visual analogue scales but not the LSI-A is useful. They state that the LSI-A scale measures lifelong attitudes that resist change, whereas the visual analogue scale may be a more sensitive indicator of life satisfaction in the present. The analysis (t-tests) does not control for the effects of other variables. No limitations acknowledged (i.e. drop out, unrepresentative sample). The authors do not relate the findings back to their question regarding the 'provider dose'. They state that the intervention had a positive clinical effect on the physical and mental health of a group of frail elderly people living independently. **Applicability:** The similarities between the intervention and programmes in the UK would indicate that although conducted in Hawaii the programme is likely to be applicable to similar populations or settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Elavsky et al. (2005). Before and after study - **Objective**: Hypothesize that physical activity effects on QOL are mediated by positive affect, self-esteem and self-efficacy. The model is tested longitudinally over a 4-year period. **Recruitment:** Participants were initially recruited through media advertising. Original participants in the exercise programme were contacted at 1 year after entry into the programme and then 4 years later. **Setting**: Location of the walking intervention was not stated. The stretching and toning group was in a gymnasium. **Country:** Not stated. Authors located in USA. **Funding Source**: National Institute on Aging (AG12113).	Either a walking or stretching intervention. However this paper does not report any comparisons. It pools the data and models the combined effects of 'physical activity'. **Providers/Deliverers:** Not specified **Length**: Not specified (in this paper) **Duration**: 6 months **Intensity:** Not specified (in this paper) **Comparator:** There is no control group. **Population details** **Inclusion**: Aged 60 to 75 years, sedentary (as defined by a lack of regular involvement in exercise during the previous 6 months verified by exercise history and assessment of aerobic capacity by maximal graded exercise testing; health to the degree that participation in exercise testing and an exercise programme would not exacerbate any existing symptoms; personal physician's clearance for participation; adequate mental status; corrected (near and far) visual acuity of 20/40 or better; and no evidence of clinical depression. **Exclusion:** Not stated **Unit of allocation**: Individual **Total:** n = 174 **Intervention**: n = 174 **Comparator:** No comparator. **Gender**: Baseline: 28% Male; 72% Female. Year 5: 28% Male; 72% Female **Mean age (range):** Baseline: 66.7 years (S.D. 5.35). Year 1: 67.68 years (S.D. 5.65). Year 5: 71.67 years (S.D. 5.22) **SES:** None presented	**Baseline comparability:** No comparator group **Attrition** **Number of participants completing study:** 123 **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Self-report **Statistical methods:** Panel analysis was performed using covariance modelling with full-information maximum-likelihood (FIML) estimation in AMOS 4.0 **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up**: 1 year and 4 years. **Mental well-being measure(s):** Memorial University of Newfoundland Scale of Happiness (MUNSH); Satisfaction with Life Scale (SWLS) of Deiner et al. **Power calculation**: Not reported	The panel model provided a good fit for the data χ^2 =35.86, RMSEA = .07 (90% CI = .03-.10), CFI = .97. Although the chi-square value was statistically significant (p=.005) the RMSEA point estimate and the CFI approximated criteria for good model-data fit. At the 1-year assessment, standardized parameter estimates indicated that physical activity had a significant direct effect on self efficacy (.29), physical self esteem (.38) and affect (.18). In turn, affect (.59) and self efficacy (.17) had direct effects on satisfaction with life. At the 5-year assessment, change in physical activity had direct effects physical self esteem (.14) and affect (.20), and change in affect (.61) had a direct effect on residual change in satisfaction with life. **Adverse effects:** None reported	Did not include measures of physical or physiological function of fitness, which are likely to play a role in any physical activity and QOL relationship. The diagram in the paper suggests that the authors are measuring observed (as opposed to latent) variables. However there is no mention of how the two exercise conditions were combined into the one variable 'activity', or why the authors pooled the two interventions. Why not separate estimate for each condition? **Applicability:** The extent to which the basic approach & these interventions are applicable to the UK is difficult to determine.

Study Details	Intervention and population details	Analyses	Results	Comments
Engels et al. (1998). Controlled non-randomised trial– **Objective:** To evaluate the effects of supervised exercise training with and without the use of light extremity weights (0.68kg wrist) on aerobic fitness, muscular strength, flexibility, static and dynamic balance, skinfold thickness, and psychological mood states in older adults. **Recruitment:** 34 older adults living independently were recruited from a local senior citizen community centre and from among elderly volunteers working at Mount St. Clements General Hospital. (There are no details as to how many people were approached and refused, or why 34 was thought to be a good number). **Setting:** Not stated. **Country:** USA **Funding Source:** The Mount Clemens General Hospital Foundation.	The exercise intervention consisted of a warm up and cool down period, a low-impact moderate intensity (50-70% maximum heart rate) aerobic dance workout, and selected activities to enhance muscular fitness, flexibility and postural stability. **Providers/Deliverers:** An experienced, certified geriatric exercise leader. **Length:** 60 mins. **Duration:** 10 weeks. **Intensity:** 3 x week. **Comparator:** Comparisons are made between 1) no-exercise controls,2) exercise with wrist weights and 3)exercise without wrist weights. **Population details** **Inclusion:** To be eligible for the study, participants had to obtain approval by their personal physician and to pass a clinical health screening examination. Only apparently healthy older adults, including individuals with stable, controlled conditions for which exercise training and testing was not contraindicated were allowed to take part. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** n = 34. **Intervention:** n = 12 (wrist weight). **Comparator:** n = 11 (no weight); n=11 (non-exercise control). **Gender:** 9 females; 2 male. **Mean age (range):** 68.6, sd=5.6. **SES:** None stated.	**Baseline comparability:** The authors state that there were no significant differences before the intervention among the three study groups with respect to basic physical characteristics, weight, height or for any other study variables examined. **Attrition** **Number of participants completing study:** 11 in the no exercise control, 10 in the no weights exercise and 10 in the wrist weights exercise. **Reasons for non-completion:** 3 subjects failed to complete due to illness or injury unrelated to the study. **Process details** **Data collection methods:** Self report. **Statistical methods:** MANOVA. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Post intervention. **Mental well-being measure(s):** Profile of Mood States (POMS). **Power calculation:** Not presented.	No effects sizes reported. The paper reports means and standard deviations for 6 of the POMS dimensions. The only significant improvements at p=.05 are for the dimension of vigour-activity in the no weights (pre m=26.9, sd=5.2; post m=29.3, sd=5.9) and in the wrist weights (pre m=27.3, sd=5.6; post m=32.1, sd=6.7). No F values are reported. **Adverse effects:** None reported	The authors do not offer any explanation as to why the intervention did not have any effect on five of the six dimensions of the POMS. They suggest that the 10 week intervention may be relatively short term, but fail to consider the effects of their small, non-representative sample. This study is too small and there is also potential of bias. The results are open to dispute. **Applicability:** Applicable only to the population or settings included in this paper (healthy older adults, including individuals with stable, controlled conditions for which exercise training and testing was not contraindicated).

Study Details	Intervention and population details	Analyses	Results	Comments
Fabre et al. (1999). Controlled non-randomised trial - **Objective**: What are the changes in quality of life for elderly healthy subjects using different methods of mental rehabilitation? **Recruitment:** Recruited from social clubs or by personal contacts. **Setting**: Laboratory. **Country:** France. **Funding Source**: Funded by INSERM.	The study compared aerobic training and mental training interventions. Aerobic training (AT) = two supervised 1 hour exercise session per week for 2 months. First type of session, each session subjects took part in walking and after several sessions a few individuals began running to maintain the target heart rate. The second type of session, the aerobic exercise session began with 5 min of warm-up followed by 45 min of interval training and ended with 10 min of cool down. **Providers/Deliverers:** Physician for AT and combined aerobic and mental training programme(AMT). Not clear for memory training only (MT). **Length**: 1 hour for aerobic sessions. 90 minutes for mental training sessions. **Duration**: 8 weeks. **Intensity:** The intensity of the exercise was determined by the heart rate that corresponded to ventilatory threshold. **Comparator:** Memory training (MT) sessions lasted 90 minutes and were held once a week for 8 weeks. Session began with an explanation of the mechanisms of memory for 15 min and then subjects worked according to the theme of the session. Israel's method (1987) was used, which teaches the practical use of the principles of association. There were also a combined aerobic and mental training program group (AMT), and a control group (C). **Population details** **Inclusion**: French, and sedentary (involved in up to 2 hours per week of walking or gymnastics). **Exclusion:** Clinically relevant depression as disclosed by a score =>7 on the Hamilton depression scales; positive electrocardiogram, hypertension, medical treatment altering cardio-respiratory responses to exercise; drugs that could interfere with memory performance, and mood; mental impairment; 80 on BEC 96 adjusted for age and schooling. **Unit of allocation**: Individual **Total:** n = 32: 8 in aerobic training (AT) group; 8 in mental training (MT) group; 8 in combined aerobic and mental training (AMT) group; 8 in control group. **Intervention:** n = 24 – (8 AT; 8 MT; 8 AMT). **Comparator:** n = 8. **Gender**: 16% Male; 84% Female **Mean age (range):** Overall age range not given. AT = mean age 65.4 +/ -6.2 years, MT = mean age 67.5 +/- 3.4 years, AMT = mean age 64.9 +/- 3.9 years, C = mean age 65.7 +/- 4.2 **SES:** None reported	**Baseline comparability:** Yes. AT = mean age 65.4 +/ -6.2 years, mean weight 62.9 +/- 7 kg, mean height 159 +/- 5.1cm, physical activity (measured on questionnaire) mean score 7.2+/- 3.4; MT = mean age 67.5 +/- 3.4 years, mean weight 61.1 +/- 12.4kg, mean height 155.6 +/- 6.2cm, physical activity mean score 5.4 +/- 3.1; AMT = mean age 64.9 +/- 3.9 years, mean weight 61 +/- 9.3kg, mean height 157.9 +/- 7.9cm, physical activity mean score 6.5 +/- 2.5; C = mean age 65.7 +/- 4.2, mean weight 57.2 +/- 10.4 kg, mean height 161 +/- 7.3cm, physical activity mean score 7.3 +/- 5.3. **Attrition** **Number of participants completing study:** Not stated. **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Not clear, the text indicates that the quality of life questionnaire was administered individually. **Statistical methods:** Descriptive analysis. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up**: Not clear. **Mental well-being measure(s):** The Subjective Quality of Life Profile (Gerin et al. 1992). Four dimensions – functional life, social life, spiritual life and self evaluation of the programme (satisfaction, and importance). This questionnaire was administered after the intervention training only, and the control group did not complete it. **Power calculation**: Not presented.	A significant improvement in the degree of satisfaction was found in the aerobic trained groups (P < 0.05). However, AMT group was significantly more satisfied than AT and MT (P < 0.01). A significantly high importance was attributed to changes in well-being in the AMT and At groups (P < 0.01), whereas no importance was attributed to an absence of change in MT group. **Adverse effects:** None reported.	The quality of the paper is poor and the sample was very small for examining four conditions. The sample included younger people (between 59-65) as well as those in the target population (i.e. 65+). **Applicability:** The poor quality of the paper makes applicability difficult to determine. The study is conducted in France with a small, essentially opportunistic sample, which further limit any generalisability.

Study Details	Intervention and population details	Analyses	Results	Comments
Fisher & Li (2004). Cluster randomised controlled trial + **Objective:** What are the effects of a neighbourhood walking programme on quality of life among older adults **Recruitment:** 56 of 93 neighbourhoods in Portland were randomly selected. Individual participants were randomly recruited from lists of residential addresses generated by computer-assisted telephone interview system followed by direct mail with brochure and personal contact methods using door-to-door canvassing. The overall response rate as a % of the sampling frame is not presented. **Setting:** In participants own neighbourhoods. **Country:** Neighbourhoods in the Northeast metropolitan area of Portland, Oregon, USA. **Funding Source:** Grant AG 17510 from the National Institute on aging.	The intervention is a community-based neighbourhood walking programme involving 3 walks per week for 6 consecutive months in groups. It is part of the Senior Health and Physical Exercise (SHAPE) project. **Providers/Deliverers:** Trained walking leaders **Length:** Approx 1 hour **Duration:** 3 sessions per week for 6 consecutive months **Intensity:** Low to moderate **Comparator:** Education only control **Population details** **Inclusion:** 65 and older, sedentary, able to walk without an assistive device **Exclusion:** Not reported **Unit of allocation:** Individual **Total:** n=582; 56 neighbourhoods. **Intervention:** n=279. **Comparator:** n=303 control. **Gender:** Overall female =69%. 74% F in IV; 64% F in C. **Mean age (range):** IV 74.03 +/- 6.3; C 73.94 +/- 6.23. **SES:** 22% of neighbourhoods had a mean total house-hold income of less than $15,000	**Baseline comparability:** Yes mostly, but they were significant differences between IV and C groups for % women and % white participants at baseline. **Attrition** **Number of participants completing study:** n=156 completed the intervention. There are no details as to how many completed the education only comparison group. **Reasons for non-completion:** Relocation, lack of transport, poor health, time conflict and/or other commitments, lack of interest, death and others **Process details** **Data collection methods:** Unclear as to whether interview or self report. **Statistical methods:** Multi-level latent curve analysis. A two-factor (intercept, slope) model was specified and estimated for each outcome (e.g. SF-12 mental health) **Unit of analysis:** Group **Unit of allocation:** Individual **Time to follow up:** At 6 months of intervention **Mental well-being measure(s):** SF-12 mental health component; SWLS **Power calculation:** Not presented	A significant between-neighbourhood difference in mean slopes ($p<.05$). Mean slope for IV mental scores was significant ($m=1.24$, $p< .001$), whereas the mean slope for control neighbourhoods was not ($m=0.26$, $p = .10$). Variance for the slope factor was significant, indicating a significant neighbourhood-to-neighbourhood variability in change in SF-12 mental health scores among intervention neighbourhoods. Effect size =0.23. The authors report that when considering the co-variates, ethnicity (white participants) were associated with change in the SF-12 mental health score (no coefficients reported). There was a significant between neighbourhood difference in the mean slope ($p=.05$) for life satisfaction. Compared to the non-significant mean slope in the control neighbourhoods ($m=0.013$, $p=.33$) the mean slope was significant for the intervention neighbourhoods ($m=0.14$, $p<.001$), indicating a positive increase in rate of change in the SWLS scores over the course of the intervention. Effect size = 0.24. None of the co-variates were associated with the rate of change. There was no effect for either high adherence or low adherence at both the neighbourhood and individual level on mental well-being outcomes. **Adverse effects:** None reported	–Strengths - random sampling to identify a representative sample. Intent to treat analysis. Results are important for public health policy development. Weaknesses: Response rate not reported. Participants in experimental group could also have benefited from social interaction. **Applicability:** Although conducted in the USA the results are likely to be applicable to sedentary but physically able people aged 65+ in the UK..The inclusion of deprived neighbourhoods in the study extend the level of generalisability across a wide range of settings in the UK/

Study Details	Intervention and population details	Analyses	Results	Comments
Funkhouser et al. (2000). Controlled non-randomised trial - **Objective:** Does regular dream telling over a 26 week period have beneficial effects on life quality and sleep quality. **Recruitment:** Participants volunteered by responding to articles about the project in the newspaper. **Setting:** At participants' homes, over the phone. **Country:** Switzerland. **Funding Source:** Grant (No. 320051053.97, 'The effects of dream-telling in elderly persons') from the Swiss National Science Foundation.	The intervention regards regular dream telling. The study group were given a weekly opportunity via telephone to tell dreams. **Providers/Deliverers:** 12 women were recruited who were willing to telephone the test subjects. They included 1 nurse, two women working in care facilities for the elderly, two psychologists, and seven housewives. **Length:** 15-20 minutes. **Duration:** 6 months. **Intensity:** N/A. **Comparator:** The subjects in one control group were only asked unspecifically about their well-being and those of the other control group were asked about sleep and dreaming in general without going into the details of dream contents. **Population details** **Inclusion:** Not reported. **Exclusion:** Suffering from present neuropsychiatric disorder. On regular psychoactive medication. Current or past somatic disorders that would expose the subject to elevated health risks. **Unit of allocation:** Individual. **Total:** N = 67 volunteered. N = 61 included in the final analysis. **Intervention:** n = 21. **Comparator:** n = 20 control 1; n = 20 control 2. **Gender:** 33% M: 67% F. **Mean age (range):** 61-87. **SES:** Not reported.	**Baseline comparability:** Balanced on age and whether living alone or with a partner. **Attrition** **Number of participants completing study:** N = 61 of original 67 (91%). **Reasons for non-completion:** Two were excluded due to psychiatric disorders and psychoactive medication. Another 4 dropped out voluntarily. **Process details** **Data collection methods:** Telephone calls. **Statistical methods:** Univariate and bivariate tests (means and standard deviations; t tests; linear regression). Repeated measures MANOVA to determine group effect by time. **Unit of analysis:** Individual. **Time to follow up:** post intervention (6 months). **Mental well-being measure(s):** Self reported sense of well-being was measured using the World Health Organisation Quality of Life questionnaire (WHOQOL-100). **Power calculation:** Not reported.	For the WHOQOL-100 there were no systematic differences with respect to group membership. In particular the analysis demonstrated that the dream telling procedure produced no measurable changes among the three groups. The means (+/- standard deviation) of the weekly mean values for well-being amounted to 5.66 +/- 0.27, 5.47 +/- 0.27, 5.59 +/- 0.22 for control group 1, control group 2 and the study group respectively. **Adverse effects:** None reported.	Weaknesses include potential ceiling effects, as the majority of volunteers were well situated in terms of health, relationships, finances, housing and neighbourhood where they lived. Moreover, subjects volunteered due to an existing interested in dreams in one form or another. Authors state there was a possible smoothing effect due to the group members starting and finishing their involvement at differing times. Authors state there is a potential for Type II error due to the small sample size. Validated outcome measure. Lacks details about randomisation procedure. Potential for selection bias. **Applicability:** The voluntary nature of the sample indicate that the study is affected by selection bias, and it is unclear as to whether the intervention would be applicable in the UK context.

Study Details	Intervention and population details	Analyses	Results	Comments
Frieswijk et al.(2006) RCT+ **Objective**: Will an increase in self management ability ensure sustainable levels of positive well-being among slightly to moderately frail older people? **Recruitment:** Questionnaires sent to random sample of 3000 people. 45% returned questionnaires (n =1338). 825 selected based on frailty scores, 22% returned pre-test measure (n =193) **Setting**: Intervention at home **Country:** 6 municipalities in North of The Netherlands. **Funding Source**: Grant from ZonMw (The Netherlands Organisation for Health Research and Development) 014-90-046.	The intervention is a bibliotherapy called GRIP on life. It is a correspondence course consisting of five parts on how to maintain a firm grip on life in older age. It contained questions, illustrations and fictitious examples for self evaluation and to identify areas for improvement. Participants received 1 of 5 parts of the bibliotherapy course every 2 weeks after completing questionnaire on the previous part. Each part was 11-19 pages. **Providers/Deliverers:** Not reported **Length**: Not reported **Duration**: 10 weeks **Intensity:** Not reported **Comparator:** Waiting list control group received similar questions concerning features of SMA to counteract possible attention bias. **Population details** **Inclusion**: Age 65 plus. Living in one of the 6 municipalities randomly selected. Score slightly to moderately frail on GFI. **Exclusion:** none **Unit of allocation**: individual **Total** n= 193 **Intervention**: n = 97 **Comparator** n = 96 **Gender**: IV 42% male: 58% female; C 35% male: 64% female. **Mean age (range):** IV mean 72.91 +/- 6.20; C mean 73.71 +/- 6.24. range 65- 91 in both groups. **SES:** Not reported	**Baseline comparability:** Report similarities in age and frailty scores **Attrition** **Number of participants completing study** Intervention group 79 participants (82%) Control group: 86 participants (90%) **Reasons for non-completion** Health problems, being too busy, not perceiving the bibliotherapy as relevant to ones own situation. **Process details** **Data collection methods** Self-report. **Statistical methods** Descriptive statistics, ANOVA with repeated measures, F-ratios to signify mean differences. Cohen's d to describe magnitude of group differences. **Unit of analysis** Individual **Time to follow up**: 6 months post intervention. **Mental well-being measure(s):** Subjective well-being - 15 item version of the SPF-Index Level Scale Mastery scale (Pearlin & Schooler). **Power calculation**: No calculation, but claims that the study was powered to detect an effect size 'if one existed'.	The effect of the bibliotherapy on mastery was not significant for time (F,2,314)=2.52, p=ns). The interaction effect was significant for the first post test score was contrasted against the pre-test (F,1,157=4.4,p<.05,d=.031). For those in the IV group the mean level of mastery (M=3.47, sd=.85) did not differ to the pre-test score (m=3.46, sd=.82). In comparison the control showed a decrease in mastery at the time of the first post-test (m=3.36, sd=.87) as compared to the pre test (m=3.53, sd=.87). This difference ceased to exist by the time of the second post test. For the SPF-IL the IV pre-test m=2.84 sd=.42; post test1 m=2.81 sd=.33; post test 2.80 sd=.38. For the SPF-IL the control pre test m=2.81 sd=.38; post test 1 m=2.71 sd=.42; post test 2 m=2.73 sd=.46. The authors do not undertake ANOVA on these means, although they perform a regression. The variable 'condition' was significant (β=.11, p<.05) and the authors state the participants in the experimental condition scored higher at the first post test in comparison to the controls. **Adverse effects:** none	Strengths - Benefit of bibliotherapy over conventional treatments is that it can be re-applied at any given moment. Self-management bibliotherapy is cheap and easily accessible. Weaknesses - study population is only 6% of target population. Even so effect sizes are relatively small, maybe not clinically significant. Population without severe physical or psychosocial problems. Outcome measure relatively novel. Positive effect of bibliotherapy on SWB disappeared after 6 months. The authors perform a multiple regression analysis on the SPF-IL measure; however they fail to explain the procedure and coding of the variables entered into the analysis. **Applicability:** Although conducted in the Netherlands the intervention is likely to be applicable to the same populations and settings (slightly to moderately frail people aged 65+ living at home) in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Goldstein et al. (1997). Controlled non-randomised trial - **Objective:** What are the behavioural, cognitive and emotional responses to videogame play among the non-institutionalised elderly in the Netherlands? **Recruitment:** Announcement in the housing newsletter asking for anyone interested in taking part in a study of video games. Interested volunteers attended an information lecture where the purpose and procedures where outlined. 50 people attended, 22 volunteered for the study. **Setting:** Participants apartments **Country:** The Netherlands **Funding Source:** Nintendo Netherlands kindly provided the SuperNes systems and software used in this research.	Instructed to play SuperTetris game for a minimum of 5 hours per week over the 5 week period. **Providers/Deliverers:** Not reported **Length:** n/a **Duration:** 5 weeks **Intensity:** n/a **Comparator:** No treatment control group. **Population details** **Inclusion:** Over 60, mentally competent with good vision and no motor impairments **Exclusion:** Not reported **Unit of allocation:** Individual **Total:** N = 22. **Intervention:** n = 10. **Comparator:** n = 12. **Gender:** 2 men: 20 women. (91%F: 9% M) **Mean age (range):** 69-90 **SES:** Not reported	**Baseline comparability:** Yes they were balanced on age and outcome measures, including emotional well-being. **Attrition** **Number of participants completing study:** Not reported, but assume all 22 (100%) **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Self-report questionnaires. **Statistical methods:** MANOVA, univariate tests. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Post intervention. **Mental well-being measure(s):** Emotional well being - 10 items selected from a 36 item scale by Hermans and Tak-van der ven. No mention of a validation process. **Power calculation:** Not reported.	There was a reduction in wellbeing scores in both groups after the intervention, although this decline was less marked in the experimental group when compared to the control group $F(1, 17) = 5.76$, $p = .03$. Experimental group pre-test M = 2.11 sd = 1.80, post-test M = 1.89, sd = 1.54; change M = 0.22, sd = 1.30. Control group pre-test M = 2.18, sd = 2.90; post-test M = 0.63, sd = 1.40; change M = 1.55, sd = 2.33. **Adverse effects:** None reported.	The scale used to measure emotional well being used only 10 items from a 36 item scale. Reliability or validity analyses are not reported for this measure. The authors fail to address the negative effect of the intervention on well-being. Both groups emotional well being decreased over the study duration indication potentially adverse effects of the study. The authors cannot explain the overall deterioration in well-being. Small sample size and lack of valid outcome measure. **Applicability:** The voluntary nature of the sample indicate that the study is affected by selection bias, and it is unclear as to whether the intervention would be applicable in the UK context.

Study Details	Intervention and population details	Analyses	Results	Comments
Grant et al. (2004) Controlled non-randomised trial - **Objective**: To investigate the effect of a 12 week exercise programme on functional status, CHD risk factors and psychological variables in overweight middle-aged women. **Recruitment:** Subjects were invited to participate if they were a member of a general practice in the Shettleston Health Centre, Glasgow. 65 expressed an interest in the study. **Setting**: Exercise Classes **Country:** Glasgow, Scotland **Funding Source**: Not reported	A 12 week exercise programme of aerobic, strength, endurance and flexibility exercises. **Providers/Deliverers:** Not reported **Length**: 40 minutes **Duration**: 12 weeks **Intensity:** Twice a week **Comparator:** Within group pre and post differences, and differences between exercise and control. The control group received no intervention and are not described. **Population details** **Inclusion**: Female, overweight, aged between 55-70, sufficiently mobile. **Exclusion** Patients with insulin dependent diabetes, moderately active most days of the week. **Unit of allocation**: individual **Total** n = 44 **Intervention**: n = 23 **Comparator** n = 21 **Gender**: 100% female **Mean age (range):** 55-70 years, mean age 63 years (sd 4). **SES:** Not reported	**Baseline comparability:** The authors report that there are no significant differences at baseline between the intervention and control groups. **Attrition** **Number of participants completing study** 8 of the 21 controls dropped out. For the 23 assigned to the intervention group, 6 of the 23 interventions failed to start the classes. 2 dropped out after 1 session and 2 failed to complete five sessions. **Reasons for non-completion** Various personal reasons are reported. **Process details** **Data collection methods** Self-report **Statistical methods** Paired sample 95% confidence intervals applied to change scores; two sample 95% confidence intervals for difference of changes. **Unit of analysis** Individual **Unit of allocation:** individual **Time to follow up**: 12 weeks **Mental well-being measure(s):** Life satisfaction questionnaire (Nuegarten & Havinghurst) **Power calculation**: none	The exercise group improved their life satisfaction significantly compared to the controls. 95% CI for intervention minus controls = -3.8 (-6.1, - 1.4). Exercise group time 1 m=12.0, sd=5.9, time 2 =15.2 sd=3.6. Confidence interval for exercisers -3.3 (-5.3, -0.9). Controls time 1 m=13.9, sd=4.4, time 2 m=12.8, sd=5.6. Confidence intervals for controls 0.7 (-0.7, 2.0). Exercisers minus controls -3.8 (-6.1, -1.4). **Adverse effects:** none	Limited sampling frame Within group differences on 13 people should be treated with caution. The authors acknowledge the lack of statistical power, but state that the study indicates that this type of intervention has the potential to enhance health status of middle-aged overweight women. In terms of life satisfaction they note that the exercisers had much greater contract with experimenters and more interaction with each other than the controls. On that basis the positive results could reflect social interaction rather than exercise. **Applicability:** The study was conducted in Scotland and the results are likely to be applicable to similar populations (sufficiently mobile but overweight females) in the UK. However due to methodological limitations, the broader application is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
Greaves & Farbus (2006) Mixed method study incorporating qualitative (interviews and focus groups) and quantitative (observational study assessed at 3 time points) methods. + **Objective:** To evaluate a complex intervention delivered through the Upstream Healthy Living Program. **Recruitment:** Qualitative participants were selected through the quantitative sample who were all drawn from participants of Upstream who joined the scheme between the study dates. **Setting:** Community based outreach program in group settings or individual's homes. **Country:** Devon, England **Funding Source:** The Big Lottery funded the Health Living Centre. Research commissioned by Upstream Health Living Centre and staff from the centre involved in the fieldwork.	The upstream Healthy Living Centre is an outreach service for socially isolated older people in which mentors work with participants to engage in participant-determined programmes of creative, exercise and/or cultural activities with an emphasis on social interaction. The interventions are individually tailored and include activities such as painting, print making, creative writing, walk and talk groups, painting, Tai Chi, music, writing, reminiscence, falls awareness, singing, cookery, book clubs, hearing school children read, crafts. About 24% of referrals are signposted on to existing but appropriate schemes where the rest undertake activities arranged by Upstream. **Providers/Deliverers:** Mentors in the Healthy Living Centre. **Length:** unlimited. **Duration:** unlimited but study over 12 months. **Intensity:** unlimited. **Comparator:** No comparators other than baseline and follow-up measures. **Population details** **Inclusion:** Over 50s whose lives may have changed or be about to change in someway. Must be resident in the Mid Devon Primary care Trust area. **Exclusion:** No mental or physical health problems which might make them a danger to other or that require special nursing care. **Unit of allocation:** Individual. **Total:** Participants for the qualitative work were selected from the quantitative sample individual interviews with 18 participants, 5 carers and 8 participants in a focus group. Quantitative: 172 at baseline. **Intervention:** Not reported. **Comparator:** Not reported. **Gender:** 19 female and 7 male. Data not given for carers. **Mean age (range):** Not reported. **SES:** Not reported.	**Baseline comparability:** Only the intervention group. **Attrition** **Number of participants completing study:** Quantitative in the cohort sheet, qualitative = 31 (100%) 93 eligible for 12 month follow-up, 51 provided data. **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Interview and focus group. Questionnaires. **Methods:** Content analysis **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** 12 months **Mental well-being measure(s):** Qualitative interviews and focus group. SF-12 **Power calculation:** None reported	The qualitative analysis reports psychological, social and physical benefits. One of the strongest themes was the perception of psychological benefit which was largely related to increased social interaction and the perceived quality of these interactions. Only 3 of the 18 interviewed participants reported no change in their mood or health related behaviours. Participants report increased confidence in engaging in new activities and in interacting socially, reduced depression and loneliness, increased awareness and alertness, increased well-being and optimism, less dwelling on concerns and worries, increased sense of self-worth and willingness to engage in life, increased enjoyment in life. Collateral benefits for carers and family (seeing loved ones enjoying life more and respite opportunities). The baseline SF12 mental health scores were significantly lower than norms for US over 75 population and general UK population (t-values not reported). At 6 month follow-up there was a significant increase in SF-12 Mental Component Score (pre m=48.1, sd=9.94; 6 month m=51.1, sd=10.8, p=.004). 60% of the participants experienced clinically meaningful change in the mental component summary score. The improvement was not sustained at 12 month follow up (m=48.4, sd=11.6). **Adverse effects:** None reported.	Does not follow-up people who dropped out of the project – why was the scheme not working for them? So SF-12 findings are probably biased towards HLC, but still show small effects. Enjoyment of activities seems to be mediated by the project's ability to tailor activities to the individual. Difficult to determine why the SF-12 MCS score improved to 6 months only. Authors suggest that the effect may only be short term, or reflect the items of the measure which tend to relate current health status to usual activities. No comparison group renders it difficult to ascertain real effects. However the qualitative data helps to unpack the figures. **Applicability:** The study was conducted in England and the intervention is likely to be applicable to older adults in isolated areas, particularly in rural settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Halbert et al. (2000) RCT + **Objective**: Is provision of individualised physical activity advice by an exercise specialist in general practice effective for modifying physical activity, cardiovascular risk factors, and quality of life in older adults? **Recruitment:** People registered at two GP practices who met the criteria were invited to a screening appointment and completed a questionnaire. **Setting**: 2 general practices in Adelaide, South Australia **Country:** Adelaide, South Australia **Funding Source**: Public Health Research and Development Project Grant from the Department of Health, Housing, Local Government and Community Services.	20 minute session with exercise specialist, receiving individualised advice about benefits of physical activity, and pamphlet containing a plan for physical activity for the next three months. Discussed exercise plan, potential barriers to exercise and ways to overcome these. **Providers/Deliverers:** Exercise specialist. **Length**: 20 minutes **Duration**: 1 session **Intensity:** 1 session **Comparator:** Received a pamphlet promoting good nutrition for older adults which was discussed for 20 minutes with exercise specialist **Population details** **Inclusion**: 60 years plus, healthy, sedentary. **Exclusion:** Cerebrovascular or ischaemic cardiac event in previous 6 months, malignancy or other life-threatening disease, inability to comply with study requirements, contraindication for physical activity, use of beta-blockers, regular physical activity. **Unit of allocation**: individual and group through one of two GP practices. **Total** n = 299 **Intervention**: n = 149 **Comparator** n= 150 **Gender**: 48% men in intervention group and 44% men in the control group. **Mean age (range):** Intervention group m = 67.3 years (sd, 7.9 years). Control group m = 67.8 years (sd, 5.5 years). **SES:** Not reported	**Baseline comparability:** Yes for age, sex distribution, current and past medical history, current medication use and clinical parameters **Attrition** **Number of participants completing study** 264 (88%) of the total sample. 123 of the intervention group (82%) & 141 (94%) of the controls. **Reasons for non-completion** Death, illness, no interest. **Process details** **Data collection methods** Interview, self report and assessor-measured. **Statistical methods** Descriptive statistics including repeated measures ANOVA. **Unit of analysis** Indivudual **Unit of allocation:** individual **Time to follow up**: 12 months **Mental well-being measure(s):** SF-36 **Power calculation**: Sample size calculations for physiological outcome measures. No calculation for the SF-36.	The SF-36 dimension of vitality showed decreases in both the IV and control groups at 12 month follow up (p=.04, (no means reported). Women in IV group had significantly greater decrease at 12 month follow up in role emotional compared to women in the control group (P=.02, no means reported). Women reported significantly lower scores than men for mental health, irrespective of condition (P = .03, no means reported) **Adverse effects:** There are declines in SF-36 dimensions of quality of life from baseline to 12 months.	Strengths - A large number of participants and a high retention rate. Paper compromised by failure to report full results for the SF-36. The authors do not offer any explanation as to why there were negative effects. The lack of data makes it difficult to form an independent judgement. **Applicability:** Although conducted in Australia the results are likely to be applicable to the UK, although differences in health care systems should be considered.

Study Details	Intervention and population details	Analyses	Results	Comments
Hardcastle & Taylor (2001). Qualitative + **Objective**: To provide insight into the cultural and social processes that are experienced by older women in a GP exercise referral programme. **Recruitment:** Opportunistic sampling strategy. GPs referred individuals to the scheme, and new members were recruited into the study. **Setting**: In a leisure centre. **Country:** East Sussex, UK. **Funding Source**: University of Brighton.	The paper examines a group of women newly referred to an exercise programme from primary care. **Provider: l**eisure centre. **Length**: not reported. **Duration**: 10 weeks. **Intensity:** Not reported. **Comparator:** No comparator. **Population details** **Inclusion**: New members to the scheme who gave consent. **Exclusion:** Not reported. **Unit of allocation**: Individual. **Total:** N = 15. **Intervention**: N = 15. **Comparator:** No comparator. **Gender**: 100% female. **Mean age (range):** 50-80. **SES:** Not reported.	**Baseline comparability:** Yes. **Attrition** **Number of participants completing study:** N = 15 of 15. 100%. **Reasons for non-completion:** Not applicable. **Process details** **Data collection methods:** Interview and follow-up interviews. M**ethods:** Interpretivist analysis. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up**: Interviewed at start-, mid- (5 weeks) and end-point (10 weeks). **Mental well-being measure(s):** Interview comments. **Power calculation**: Not relevant.	Over 80% of the women appeared to have initiated the idea for referral with their GP, suggesting that they had already thought about changing their activity levels. Particular events, circumstances, relationships and friendships, and acquaintances and relatives seem to provide vicarious experiences and/or positive reinforcement or critical incidents and triggers to change. The authors describe how a sense of control and accountability propelled some of the women into exercise adherence so as to maintain their health and well-being. They state their research suggests that getting older and its associated health perceptions, retirement, operations and rehabilitation, life events such as moving and body image caused their participants to resume sufficient physical activity to enhance quality of life. The older women desired a sense of belonging and usefulness. Some of the women describe how they felt it provided an opportunity to socialise. The authors suggest that the gym environment at a leisure centre could be seen as a social outlet that enhances a sense of purpose and provides a sense of social inclusion. The women also highlight the importance of practical support through good supervision in the gym. They also suggest that the women experienced negative feelings through the impact of ageist social norms, that people should not become active in later life. **Adverse effects:** Some of the women were afraid of exercise as they felt that it was associated with exertion and harm.	Poor reporting of details of the exercise intervention. The authors suggest that despite the support available in the gym, GPs sometimes undermine this by not discussing the very limited harm that might be associated with exercise, and dispelling any fears. **Applicability:** Based on the responses of 15 women aged 50-80 the results provide some useful insights into the UK GP exercise referral programme.

Study Details	Intervention and population details	Analyses	Results	Comments
Hay et al. (2002). Cost utility analysis alongside RCT (Clark et al., 1997 & 2001) (Quality rating **+**) **Objective:** To evaluate medium-term cost-effectiveness of preventative occupational therapy intended to reduce health-related declines among urban, multi-ethnic, independent adults. **Recruitment:** Active recruitment in & around 2 subsidised apartment blocks. **Setting**: Unclear. **Country:** USA. **Funding**: US National Institute on Aging; National Centre for Medical Rehabilitation Research; Agency for Health Care Policy & Research; American Occupational Therapy Foundation Centre, USC; RGK Foundation; Lumex Inc; Smith & Nephew Roylan.	Intervention group (n=51): Group activity sessions to promote positive changes in lifestyle. Topics included health behaviours, transportation, personal safety, social relationships, cultural awareness and finances. The intervention was expected to improve specific health practices and increase the general sense of purpose and meaning via engaging in meaningful activity. **Providers:** Occupational therapists **Length of session:** Not reported **Intensity:** Weekly **Length of intervention:** 9 months Two comparator groups: (1) Social activity control group (n=53), who undertook activity sessions including craft, films, outings, games, dances; & (2) No-treatment control group (n=59) **Population:** 163 ethnically diverse independent-healthy older people, all resident in subsidised housing in Los Angeles. Participants were a sub-set of a larger study (n=361) who completed a telephone interview to assess service utilisation. 32 (20%) participants were disabled. There were no differences between groups were reported in muscular-skeletal, neuropsychological or respiratory problems at baseline; no further details given and no details of inclusion exclusion criteria.	**Source of effectiveness data:** Well-Elderly Study – single-centre RCT evaluating effectiveness of preventative OT in healthy older people (Clark et al., 1997 & 2001) **Costs included:** **Programme costs** = staff salary time, comprising 914.5 hours contact time with OT, & 300 hours of preparation & travel, all at hourly wage of US$23 for OT. **Active control programme costs = staff salary time, comprising** 623.5 hours contact time for active control meeting times, & 140.5 hrs of preparation, all at hourly wage of US$10 for non-professional leader. Passive control costs = nil. **Medical and care costs** were collected by diary and phone interview. Unit costs from Medicare included unadjusted payments and Diagnosis Related Group Medicare reimbursements for inpatient stays. Care costs included carer support for shopping, laundry, housekeeping, cooking & "help in making doctor appointments", all at hourly wage of US$5.75. **Perspective**: US payer **Currency**: US dollars **Cost year**: Not stated, except 1995 for Medicare costs only. **Time horizon:** 15 months = 9 months intervention + 6 month follow-up. **Discount rate =** 3%	**Effectiveness / patient / alternative:** SF36 domain scores converted to health utility index (HUI) using regression based algorithm. The change in the HUI-adjusted after the treatment phase was -0.2+/-1.3 for the OT group and -4.5+/-0.8 for the combined control group, with a difference of 4.3, ($p<0.01$). The HUI-adjusted in the follow-up phase was 80.8+/-1.3 for the OT group and 76.1+/-0.9 for the combined control group. The change in the HUI-adjusted after the follow-up phase was -0.2+/-1.3 for the OT group and -4.9+/-0.9 for the combined control group, with a difference of 4.7, ($p<0.01$). The average HUI-adjusted was 80.8+/-1.1 for the OT group and 76.3+/-0.7 for the combined control group. The change in the average HUI-adjusted was -0.2+/-1.1 for the OT group and -4.7+/-0.7 for the combined control group, with a difference of 4.5, ($p<0.01$). The analysis showed a statistically significant improvement in terms of quality of life, favouring the OT group. "Approximately 90% of the therapeutic gain observed after OT treatment was retained in follow-up, in the absence of further intervention". **Cost / patient / alternative:** Programme costs = $548 in OT group, $144 in active control group, and nil in passive control group ($68 in the combined control group). No statistically significant differences were found between study groups for medical and carer costs. So QALY calculation based on program costs only. **Incremental cost-effectiveness:** An incremental cost-utility analysis based on the programme costs was used to calculate costs and benefits of the interventions. The incremental QALY gained in the intervention group over the combined control group, based on the average HUI-adjusted score was 4.5 ($p<0.01$). The incremental cost per QALY gained with OT was $10,666 (95% CI: $6,747 - $25,430) over the combined controls, $13,784 (95% CI: $7,724 - $57,879) over the passive control, and $7,820 (95% CI: $4,993 - $18,025) over the active control.	Weaknesses: Not clear that all the sample meet our inclusion criteria as 20% were disabled, but no more details were provided. Generalisability of the study results to other settings was not addressed or sensitivity analyses performed, thus limiting external validity & applicability to UK. No analysis by age, gender or ethnicity. Programme costs included salaries only. In the absence of a clearly stated cost year we have been unable to convert findings into UK pounds.

<table>
<tr><th>Study Details</th><th>Intervention and population details</th><th>Analyses</th><th>Results</th><th>Comments</th></tr>
<tr>
<td>Helbostad et al. (2004)

RCT+ comparing 2 active interventions

Objective:
What is the effect of two exercise regimes on health-related quality of life and ambulatory capacity in community dwelling physically frail older people over 75 years of age?

Recruitment:
Invitations to participate were distributed by health care workers and by announcement in the local newspaper.

Setting:
An un-reported place for group meetings and training and test sessions, and participants exercised in their own homes.

Country:
6 local districts in Norway.

Funding Source:
Norwegian Foundation for Research in Physiotherapy, the Norwegian Research Council, and the University of Bergen.</td>
<td>Combined training (CT) involved two 60 minute sessions per week for 12 weeks. Training sessions included a 10 minute warm-up, 20 minutes of functional strength training, 20 minutes of functional balance training, and 10 minutes of relaxation and stretching. The CT group also performed daily home training (HT). Subjects were instructed to perform the same exercises and with the same intensity as the HT group.

Providers/Deliverers: Physiotherapists.

Length:
The CT group did 24 sessions of 60 minutes. The HT group training session length was not reported.
Duration:
12 weeks.
Intensity:
Not reported here, but reported in another paper.

Comparator:
Home training (HT) involved four non-progressive functional exercises aimed at improving balance and lower extremity muscle strength. Two sets per day with ten repetitions per set was prescribed for the 12 week period.

<u>Population details</u>
Inclusion:
Aged 75 or older, and either at least one fall in the last year or use a walking aid indoor or outdoor or both.

Exclusion:
Regularly exercise more than once a week, had terminal illness, cognitive impairments, suffered a stroke in the last 6 months, or judged not to tolerate exercise.

Unit of allocation: Individual.

Total: N = 77 total.

Intervention: N = 39 in CT.
Comparator: N = 38 in HT.
Gender: 81.1 % Female: 19.9% Male.
Mean age (range):
75 years and older (mean of 81 years).

SES: Not presented.</td>
<td>Baseline comparability:
Tthere were no significant differences in the two groups apart from the Barthel Activities of Daily Living Index which scored higher in the CT group.

<u>Attrition</u>
Number of participants completing study: N = 53 completed the intervention (25 in CT group, 28 in HT group). 69 % total completion rate. 64% CT group; 74 % HT group.

Reasons for non-completion:
No interest, illness, completed intervention but not tested.

<u>Process details</u>
Data collection methods:
Participants assessed by assessors delivering questionnaires. Participants assessed at close of intervention (3 months) and at 9 months.

Statistical methods:
Paired t-tests, ANCOVA.

Unit of analysis: Individual.

Time to follow up:
6 months after intervention. 9 months total time.

Mental well-being measure(s):
SF-36.

Power calculation:
Not reported but significant findings provide some justification a posteriori.</td>
<td>The mental health index improved significantly more in the CT group than the HT group from to three months explained by improvements in the CT group only (p<0.01). At 9 months none of the SF-36 scales were different between groups.

<table>
<tr><th></th><th>Mean</th><th>SD</th><th>Change p values</th></tr>
<tr><td>CT baseline</td><td>74</td><td>17</td><td></td></tr>
<tr><td>CT 3 months</td><td>80</td><td>15</td><td>0.012</td></tr>
<tr><td>CT 9 months</td><td>75</td><td>14</td><td>0.35</td></tr>
<tr><td>HT baseline</td><td>73</td><td>18</td><td></td></tr>
<tr><td>HT 3 months</td><td>75</td><td>14</td><td>0.35</td></tr>
<tr><td>HT 9 months</td><td>72</td><td>15</td><td>0.68</td></tr>
</table>
Adverse effects:
None reported.</td>
<td>The HT program may not have met the demands for social contact and sense of belonging for the participants. In contrast the CT group was delivered at a health care centre, and participants were provided with free transportation to get there.

In general the study was well conducted and reported but the recruitment method may have given a sample of well-motivated participants. The results cannot be generalised to all home-dwelling older people with mobility problems. Even so the benefits are transient,so caution is needed when interpreting the findings.

Applicability:
Although conducted in Norway the results are likely to be applicable to similar populations (well motivated but frail elders aged 75+) and settings in the UK. The broader application in uncertain.</td>
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Study Details	Intervention and population details	Analyses	Results	Comments
Heliker et al. (2000) Uncontrolled before and after study on 2 sites - **Objective:** To demonstrate the feasibility and effectiveness of horticulture therapy and the perceived meaning and outcome on well-being of a structured gardening intervention. **Recruitment:** Not reported **Setting:** Two community sites: a) a senior nutrition centre in rural Texas; b) a large botanical garden in Galveston, Texas **Country:** Galveston, Texas. USA **Funding Source:** Grant from the Department of Community Health and Gerontology, School of Nursing, University of Texas Medical Branch – Galveston.	The intervention consists of a gardening project - 12 classes conducted by two investigators (horticulture therapists). The classes were educative and interactive, including topics such as propagation techniques, terrariums, hanging baskets and planting herbs. Plantings were carefully tended by the participants on a daily or weekly basis depending on the site. Each participant was responsible for their own plantings until they were ready to be taken home. **Providers/Deliverers:** Two investigators, both horticultural therapists, one of whom is a registered nurse. **Length:** One and a half hours. **Duration:** 4 months. **Intensity:** Once per week. **Comparator:** No comparisons are made between the two sites, but pre/post comparisons are made within the 2 sites. **Population details** **Inclusion:** Aged over 62, able to speak and understand English. **Exclusion:** Not reported **Unit of allocation:** Individual. **Total:** n=30 (before exclusions) **Intervention:** n = 30. **Comparator:** No comparator group. **Gender:** Gp A 7F: 5M = 58% F: 42%M. Gp B 11F: 1M = 92% F: 8% M. **Mean age (range):** Gp A 67-90, M = 79. Gp B 63-83; M = 70.1. **SES:** 11 of 12 in group A had an annual income of less than $10,000. 10 of 12 in group B had an annual income over $10,000. No more details provided.	**Baseline comparability:** not reported. **Attrition** **Number of participants completing study:** N = 24 (80%). **Reasons for non-completion:** Incomplete questionnaires or inability to continue due to sickness. **Process details** **Data collection methods:** Semi structured interview developed by the horticultural therapists and self-report questionnaires. **Statistical methods:** Paired t tests. Content analysis were used to examine interview data. **Unit of analysis:** Individual. **Time to follow up:** 4 months after project completion. **Mental well-being measure(s):** Perceived well being revised scale (PWB-R) measures individuals perceived physical and emotional well being. 16 items, 8 psychological W-B, 8 physical W-B. Sources of Meaning Profile-M (SOMP-M) measures the sources and degree of personal meaning in one's life. It is a measure of present meaning which "is based on commitments, activities, and pursuits". The Life Attitude Profile (LAP-R) is a multidimensional measure which focuses on life purpose, life control, will to meaning, goal seeking, and future meaning. **Power calculation:** Not reported.	Paired t-tests demonstrated a significant improvement in the psychological well-being subscale (t = -8.81; p< .000; 95% CI -9.776, -6.058), when both groups were combined. Both groups demonstrated a significant improvement in psychological well-being (p < .000) individually while only Group A demonstrated significant improvement in general well-being (p< .007). Life Attitude Profile - there were no significant differences in the six dimensions of this instrument. Sources of meaning Profile-M. There were no demonstrated significant findings in either group on this instrument. From the semi-structured interviews (and of relevance to mental well-being) a theme of gardening inducing spiritual well-being and healing emerged – perhaps the most promising finding. **Adverse effects:** none reported	Results should be interpreted with caution. Lack of a no-treatment control group and the small sample size. No means or standard deviations are reported. The participants in the botanical gardens site were already volunteers there, and already had an interest in gardening. Seven of the participants have also participated in other new activities including other garden workshops. Weaknesses include a small sample size, lack of control group, presence of confounding variables, difficult language and excessive number of choices in questionnaires Standardised measures and standard population **Applicability:** The study is compromised by selection bias and the broader application is uncertain. However the intervention is likely to be appropriate in the UK context, as gardening is widely cited as being an important activity by many older people,

Study Details	Intervention and population details	Analyses	Results	Comments
Hill et al. (1993). Controlled non-randomised trial - **Objective:** What effect can long-term aerobic training have on self-reported morale in a non-depressed sample? **Recruitment:** Participants were recruited from advertisements for volunteers to enrol in the exercise programme **Setting:** Washington University Medical School, Department of Internal Medicine **Country:** Washington DC, USA **Funding Source:** National Institutes of Health Program Project Award AG-05562. Dr. Robert D Hill was supported by National Institute on Aging grant AG 00030	Individually prescribed exercise regimen based on their initial fitness level. The program occurred in two phases: a) Flexibility training (2 months) that included stretching and warm-up exercises, and b) progressive aerobic exercise (9-12 months). **Providers/Deliverers:** Not specified. **Length:** 3-5 50 minute sessions each week. **Duration:** 12 months maximum. **Intensity:** Intensity of intervention was tailored to each individual's baseline level of fitness, and periodically adjusted by measured improvements in VO_{2max} that were taken every 3 months. **Comparator:** Non-exercising control. **<u>Population details</u>** **Inclusion:** Healthy, non-smokers, normally active, but had not engaged in exercise training (defined as 30 minutes of aerobic activity less than or equal to 2 days per week) for at least 2 years. **Exclusion:** Health status was evaluated by physicians using the following procedures: medical history, including a brief mental status exam, physical examination, SMA-12 blood chemistry, haematological evaluation, urinalysis, chest x-ray, resting electrocardiogram, and a maximal treadmill exercise test with continuous ECG and blood pressure monitoring. Participants were excluded if screening contra-indicated exercise. **Unit of allocation:** Individual. **Total:** n = 229. **Intervention:** Not reported. **Comparator:** Not reported. **Gender:** 49.6% Men, 50.4% women. **Mean age (range):** 60-73 years (M=64.0, sd = 3.1). **SES:** 64% were (or had been) employed in professional occupations (e.g. dentist, teacher, engineer).	**Baseline comparability:** No differences between groups were noted for age [F (1,119) =0.64, p>.40] or relative weight at baseline [F (1,119) = 1.33, p>.2] and there were no gender differences [$x^2(1) = 0.75$, p>.30]. No group differences in self-reported morale were found at baseline [F (1,119) = 0.78, p>.30]. **<u>Attrition</u>** **Number of participants completing study:** n = 121. n=87 exercisers, n=34 controls. **Reasons for non-completion:** The size of the initial sample at randomisation is not clear - the study may not have been subject to any attrition. **<u>Process details</u>** **Data collection methods:** Not clear, the text indicates that the PGC was administered. **Statistical methods:** Univariate ANOVA was used to assess group effects for the residualized scores from the PGC. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Immediately after the termination of the program. **Mental well-being measure(s):** Philadelphia Geriatric Center Morale Scale (PGC). **Power calculation:** Not presented.	ANOVA revealed a significant group effect for the residualized scores from the PGC Moral Scale [F (1,119) =7.24, p<.01], indicating that those in the exercise condition improved in morale from pre- to post-testing over the control group. Exercise (n=87) pre m=14.60 sd=1.97, post m=15.62 sd=1.51; control (n=34) pre m=14.94 sd=1.81, post m=15.00 sd=1.92. **Adverse effects:** None reported	The psychological measure was not as comprehensive as they would have liked. The study was a non-randomised trial. Because exercise has been found to be beneficial to cardiac health, participants were only assigned to the control group until it was a sufficient size for between-groups comparison. Subsequent individuals were assigned only to the exercise condition. Therefore potential for selection bias which could positively effect results The PGC scores were skewed toward the upper end of the distribution at baseline. The findings therefore may have had a larger effect if a measure with a wider range for positive affect had been used. **Applicability:** The voluntary nature of the sample indicate that the study is affected by selection bias, and it is unclear as to whether the intervention (conducted with volunteers in the USA) would be applicable in the UK context.

Study Details	Intervention and population details	Analyses	Results	Comments
Hirakawa et al. (2003) Controlled non-randomised trial - (using alternative allocation) **Objective**: To evaluate the effectiveness of home massage rehabilitation therapy on elderly patients who are either confined to bed or a chair. **Recruitment:** From local home nursing stations, visit care stations, day service centre. (100 stations approached, 17 co-operated). **Setting**: At home **Country:** Japan **Funding Source**: Grant from Mitsui-Sumitomo Insurance Welfare Foundation, Tokyo. Aid from Mr Haruta and the Association of Licensed Massagers of Aichi prefecture on study design.	Home massage including therapeutic massage and nursing massage and kinesitherapy (balancing and gait exercise). **Providers/Deliverers:** qualified massage practitioner **Length**: 30 minutes **Duration**: 12 weeks **Intensity:** 2-3 days per week **Comparator:** routine care group **Population details** **Inclusion**: 65 years or older, cognitive impairment unlikely to interfere with adherence to the study, bedridden condition rand B or C (chair ridden), stable general condition and no rehabilitation therapy in last three months. Physician consent. **Exclusion** none reported **Unit of allocation**: individual **Total** n = 53 **Intervention**: n = 26 **Comparator** n= 27 **Gender**: 14 females in intervention group and 6 females in the control group. **Mean age (range):** intervention group: mean age = 80.09 SD ± 8.09. Control group: mean age 79.67 SD ± 8.46, p = 0.76. **SES:** not reported	**Baseline comparability:** Balanced by age, presence of spouse and diseases associated with disabilities and use of day care rehabilitation. **Attrition** **Number of participants completing study** 40/53 in total, 22/26 in intervention group. **Reasons for non-completion** 4 hospitalised in the routine treatment group, all the rest were unknown reasons. **Process details** **Data collection methods** Assessed by qualified assessor such as a nurse, physical therapist, occupational therapist or care manager. **Statistical methods** Descriptive statistics, ANOVA. **Unit of analysis** Individual **Unit of allocation:** individual **Time to follow up**: 3 months **Mental well-being measure(s):** Subjective Satisfaction and Refreshment Scale, Apathy Scale **Power calculation**: none	No significant differences between groups at baseline or over time. There were no changes in scores. Subjective Satisfaction Scale (mean ± SD) (95%CI) = intervention at baseline: 0.90 ± 0.85 (0.50-1.30) and 3 months: 1.00 ± 0.80 (0.63-1.37) control at baseline: 1.35 ± 0.70 (0.99-1.71) and at 3 months 1.00 ± 0.61 (0.69-1.31). Apathy scale (median) (95%CI): intervention at baseline 18 (16-25) and at 3 months 23 (18.5-27.5): control at baseline 23 (18-28.5) and at 3 months 25.5 (20.5-31) SDS (median (95% CI): intervention at baseline 45 (42.5-49.5) and at 3 months 23 (18.5-27.5): control at baseline 46.5 (38.5-50) and at 3 months 39.5 (41.5-55.5). **Adverse effects:** none	Assessors were not blinded, and probably found out who was given the intervention because they were staff from the participating stations usually providing home case to participants. The sample size was small. The results are confounded as some participants were also receiving rehabilitation, acupuncture and moxibustion. Poor randomisation process **Applicability:** Owing to the methodological limitations of this study, the findings of the study should not be generalised to other populations.

Study Details	Intervention and population details	Analyses	Results	Comments
Hoch et al. (2001) CBT - **Objective**: As a pilot project, the aim was to determine whether two sleep health interventions produce measurable benefit to quality of well-being in non-complaining elders in good mental and physical health, while inducing minimal negative effects (e.g. daytime sleepiness) **Recruitment:** 21 volunteers were recruited from an ongoing study entitled 'Sleep and Sleep Quality in Successful Aging". **Setting**: The location of the instruction/training component is not stated. The time in bed restriction took place in the participants' own homes. **Country:** Not stated. Authors located in Pennsylvania, USA **Funding Source**: National Institute of Mental Health	Time in bed restriction: Participants were instructed to delay bedtime by 30 minutes a day. Participants were also allowed to take a 30-minute nap between 2pm and 4pm daily, as needed. During the initial phase, participants met weekly for 1 hour with the project co-ordinator and principal investigator. Subsequent weekly meetings reviewed daily sleep logs, assessed daytime sleepiness, reinforced bed restriction and good sleep hygiene (described below), completed study measures, facilitated compliance, and answered questions. Sleep Hygiene education intervention: Participants received sleep-hygiene education from the project co-ordinator and principal investigator, following the same meeting schedule, and completed the same study measures as participants in the bed-restriction condition. Initial contacts focused on education about the principles of sleep hygiene, including the effects of caffeine, tobacco, alcohol, and medications; the benefits of moderate exercise and dietary practices as they pertain to sleep; and attention to room temperature, noise, lighting, and pre-bedtime routines. Participants were specifically not instructed about the amount of time spent in bed but did receive instructions about keeping regular bedtimes and wake-up times and about taking regular naps. **Providers/Deliverers:** Project co-ordinator and Principal investigator. **Length**: Education delivered 1 hour / week for 8 weeks. 30 minutes every other week 9-24. 30 minutes every month for weeks 25 - 52. Sleep restriction of 30 minutes per day for the time in bed restriction group. **Duration**: 52 weeks **Intensity:** n/a **Comparator:** The control group received no sleep related intervention but were participants in the study 'Sleep and Sleep Quality in Successful Aging'. These participants had same baseline & 1 year assessment as the intervention groups. **Population details** **Inclusion:** No complaints of insomnia, daytime sleepiness, or other sleep disturbance and no evidence of current or past psychiatric disorder as determined by administration of the Structured Clinical Interview for DSM-IV (SCID).A score of less than seven on the Hamilton Depression Rating Scale and of 28 or greater on the Folstein Mini-Mental Status Examination (MMSE). Participants also had a physical examination, electrocardiogram, complete blood count, thyroid function tests, and chemistry screen to detect serious or uncontrolled physical health problems as well as medication use that could affect sleep or mood. Participants under a physicians' care for stable medical illness (e.g. heart disease, hypertension, arthritis, diabetes, thyroid disease and with health conditions that posed no major limitation to activities of daily living were eligible. **Exclusion** Participants who had an apnoea-hypoapnoea index of 20 or greater or a sleepiness index of 50 or greater (i.e. a mean sleep latency of =< 10 min) on the multiple sleep latency test were excluded from the study. **Unit of allocation**: individual **Total** n = 42; **Intervention**: n= 21; **Comparator** n = 21 **Gender**: Bed restriction group: 27.3% male, 72.7% female. Sleep hygiene group: 40% male, 60% female. Control group: 33.3% male, 66.7% female **Mean age (range):** Bed restriction group: 79.9 years (s.d. 6.2). Sleep hygiene group: 79.2 years (s.d. 3.3). Control group: 80.4 years (s.d. 5.5). **SES:** Not reported	**Baseline comparability:** Intervention and control groups were balanced at baseline. Archival control participants did not differ from respondents participating in the trial on key demographic and clinical measures. **Attrition** **Number of participants completing study** Not stated although one table indicated that at year one 9 people in the bed restriction group and 9 in the sleep hygiene group completed the SF36. **Reasons for non-completion** None given **Process details** **Data collection methods** Not stated **Statistical methods** A Kruskal-Wallis test on the 8 week, 6-month and 1 year change scores were preformed in order to determine whether the two intervention conditions had different effect over time. A Kruskal-Wallis test was also used to evaluate differential changes between participants in the two intervention groups and those in the archival (non-intervention) control group from baseline to 1 year follow-up **Unit of analysis:** Individual **Unit of allocation:** individual **Time to follow up**: Immediately after study. **Mental well-being measure(s):** Campbell well-being scale (Campbell et al 1976), SF-36 **Power calculation**: None given	Results are presented for baseline (T1) and 1 year follow up (T4). No data is presented for the significance tests. Campbell well-being: Bed restriction group - T1 (n=11) 12.8 (s.d. 1.6), T4 (1 year) (N=9) 13.5 (s.d. 0.8); Sleep hygiene group - T1 (n=10) 13.5 (s.d.1.0), T4 (n=9) 13.6 (s.d. 1.0); Control group - T1 (n=7) 11.6 (s.d.2.0), T4 (n=8) 12.4 (1.9). SF-36 Mental component: Bed restriction group - T1 (n=10) 57.0 (s.d. 6.3), T4 (n=9) 60.3 (s.d. 6.0). Sleep hygiene group - T1 (9) 57.2 (s.d. 5.7), T4 (n=9) 58.4 (s.d. 5.5). No measures of SF36 for control group. Participants in the sleep-hygiene condition showed a trend toward improved mood on morning awakenings in the first 8 weeks. **Adverse effects:** none	It is not clear if the researchers were blinded to the group allocation of participants (thus potential for bias). Measures were not consistently used across all three groups. The researchers did not examine the changes in scores. Limitations of the current study include the relatively small sample size and the absence of a true non-intervention control group that the archival control only partially addresses. A more definitive randomized trial will require both a larger sample size and a longer period of treatment to determine the preventive value of either intervention (good sleep practice alone vs. good sleep practices plus restriction of time in bed) in maintaining good mental health in later life. **Applicability:** Although the study was conducted in the USA there is no reason to believe that the intervention would not be applicable to older people in the UK. The findings of this pilot study should not be generalised because of the study's methodological limitations.

Study Details	Intervention and population details	Analyses	Results	Comments
Houston et al. (2000). Before and after study with no control group + **Objective:** Does memory tapping (ie non-clinical reminiscing) improve mental well-being in older people? **Recruitment:** Participants were selected from a group of around 400 people being provided with care by district social service provision. A random selection was made of people who lived within easy travelling distance of the researcher's home. Each potential participant was pre-screened by the care manager. **Setting:** At the participants homes. **Country:** Not reported, but would suggest UK based on author affiliations. **Funding Source:** Not reported.	Compilation of a book of local older peoples wartime experiences. This involved weekly meetings with a care worker to talk about and record their war time experiences. A book of these experiences was then compiled and printed and distributed to all the participants. After the book had been distributed (Time 2) participants completed the GHQ again. **Providers/Deliverers:** Care worker **Length**: Between 1 and 2 hours **Duration**: Unclear but 5 visits over 5 weeks. (Visits 3 through 5 were weekly). **Intensity:** n/a **Comparator:** No comparators **Population details** **Inclusion:** Living in the community, in their own homes, receiving regular support with house work, meal preparation and so forth **Exclusion:** Severe cognitive impairment or serious mental health difficulties **Unit of allocation:** Individual. **Total:** N = 43 **Intervention:** **Comparator:** **Gender:** 30% M: 70% F. **Mean age (range):** M = 78 (range =66-91), **SES:** Not reported.	**Baseline comparability:** Only 1 IV group. **Attrition** **Number of participants completing study:** Not reported, assume all 43. **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Through interview (the care worker read aloud the questions and recorded the responses) **Statistical methods:** T-tests, A setwise hierarchical multiple regression procedure, analysis of partial variance (APV). **Unit of analysis:** Individual. **Time to follow up:** Post intervention **Mental well-being measure(s):** General Health Questionnaire (GHQ-28) Also looked at attributional style to determine the extent to which the participants rated the causes of events in a stable and global manner – described as attributional generality and efficacy with the Extended Attributional Style Questionnaire for the Elderly. **Power calculation:** None reported.	A paired t-test revealed that GHQ scores at Time 1 (M = 19.30) reduced significantly at Time 2 (M = 13.09), t (42) = 5.64, p<.001, r = .25, with a moderate effect size (partial eta squared =.43). For the EASQ_E the main effects of generality and efficacy were non-significant. However, for the EASQ_E, the generality x efficacy interaction is key and accounted for 27 % of the changes in GHQ scores post-intervention. For participants low in generality, high efficacy resulted in the greatest reduction in GHQ scores post-intervention (residual change at time 2 = -8.8) whereas low efficacy resulted in little change in levels of GHQ (residual change = -2.25). For those high in generality, high efficacy resulted in moderate change in GHQ scores (residual change = -4.11), whereas low efficacy resulted in much greater change (residual change = -8.52). **Adverse effects:** None reported.	A reported strength is the findings are consistent with previous research. The authors also attempted to 'blind' the participants to the nature of the project, by presenting it as two separate projects (one concerned with feelings and opinions, and the other being the compilation of wartime experiences). The authors do not report any limitations of the study, or suggestions for further research. The authors do not give any justifcation as to why the number of participants was chosen to be 43. . **Applicability:** The intervention is likely to be applicable to similar populations and settings in the UK, however the lack of a control group for comparison limits any generalisability

Study Details	Intervention and population details	Analyses	Results	Comments
Janssen (2004). Controlled non-randomised trial - **Objective**: To assess the influence leisure education programmes have on perceptions of quality of life in older adults. **Recruitment:** Residents in a specified assisted living facility were contacted by a certified therapeutic recreation specialist to determine who was interested. The researcher sent a letter to those who expressed interest. 20 people responded. **Setting**: Assistive Living Facility **Country:** Southern California, USA **Funding Source**: National Institute on Aging	Leisure education - reviewing the role of leisure in lifestyle from various components such as defining leisure, self-determination in leisure, discovering leisure resources and leisure and quality of life. **Providers/Deliverers:** A certified therapeutic recreation specialist led the sessions and provided the program. **Length**: 90 minutes per session **Duration**: 6 weeks **Intensity:** Twice a week, 90 minutes per session. **Comparator:** Control group not given the intervention. **Population details** **Inclusion**: none **Exclusion:** none **Unit of allocation**: individual **Total**: n = 18 **Intervention**: n=9 **Comparator** n= 9 **Gender**: 13 women and 9 men **Mean age (range):** 61-93 years **SES:** not reported	**Baseline comparability:** Not stated **Attrition** **Number of participants completing study** 100% completed the study **Reasons for non-completion** Not relevant **Process details** **Data collection methods** Self-report **Statistical methods** ANOVA comparing change at baseline to end of data collection period within each of the two groups. **Unit of analysis** Individual **Unit of allocation:** Individual **Time to follow up**: Week 6 of the intervention (end of intervention). **Mental well-being measure(s):** Quality of Life Profile: Senior Version **Power calculation**: None	The domain 'being' of the measure is the only one that has a psychological sub-domain. There were no significant differences in this domain. Experimental group pre m=1.58, sd=.85, post m=1.96m sd=1.27. Control group pre m=1.88, sd=.89, post m=2.15, sd=.07 **Adverse effects:** none	The authors acknowledge the small sample size, and the use of only one leisure education programme. They state that the findings are not generalisable. The study does not help in answering the question. It misses reporting key information. It does not provide enough details about the outcome measure of interest. It is underpowered and does not have enough measures of mental well-being. Participants are self selected, suggesting selection bias. **Applicability:** The use of a certified therapeutic recreation specialist limits applicability as a public health intervention in the UK

Study Details	Intervention and population details	Analyses	Results	Comments
Jette et al. (1996). Non-randomised controlled trial – **Objective:** The hypothesis is that community dwelling, non-disabled older people would perform the Strong for Life programme regularly and that regular strength training of this nature would result in increased upper and lower extremity strength, enhanced psychological well-being, and measurable improvements in overall health status. **Recruitment:** The participants were a random sample of Medicare beneficiaries aged 65 and over residing in communities of Boston and East Cambridge, Massachusetts. The study reports good attempts at reaching a large number of potential participants. Of those meeting the inclusion criteria (n=326) 102 (31.3%) agreed to participate. **Setting:** At home. **Country:** USA. **Funding Source:** Grant # AGO9715 from the National Institute on Aging, and in part by the Royal Centre for Research and Applied Gerontology (#AG11669).	The intervention is a 'strong for life' programme. This consisted of a 30 minute videotaped programme of 10 exercise routines using elastic bands, performed in a progressive weight bearing sequence from prone lying to standing. Subjects advanced within the programme at their own pace in consultation with a physical therapist who provided periodic follow up during the intervention period. **Providers/Deliverers:** Physical therapist. **Length:** 30 minutes. **Duration:** 12-15 weeks. **Intensity:** 3 times a week. **Comparator:** Wait list control group. **Population details** **Inclusion:** Written clearance from their GP, who documented no contradictions for strength training. English speaking and had to have access to a videotape player or be willing and able to use one provided by the project. **Exclusion:** Significant coronary artery disease, angina, congestive heart failure, a myocardial infarction, cardiac surgery, or significant new onset rhythm disturbance, neurological disorders with residual deficit, renal failure requiring dialysis, recent cancer with active chemotherapy or radiation treatment, uncontrolled hypertension, diabetes or seizure disorders; recent fracture; legal blindness; major mobility limitations. Failing tests of resting heart rate and blood pressure and exercise tolerance tests. **Unit of allocation:** Individual. **Total:** n = 102. **Intervention:** n = 50. **Comparator:** n = 52. **Gender:** 54.8% in exercise group, 70% in control group (after drop outs) **Mean age (range):** Age range from 66 to 87. **SES:** Annual income distribution similar in exercise & control groups	**Baseline comparability:** There were no significant differences between the two groups by gender, education, income and perceived health. They differed by age and weight. **Attrition** **Number of participants completing study:** n = 93; intervention n=42; control n = 51. **Reasons for non-completion:** Two dropped out because of the exercise programme, three dropped out due the medical problems and four dropped out through lack of interest. **Process details** **Data collection methods:** Telephone interview. **Statistical methods:** ANCOVA. **Unit of analysis:** Individual. **Time to follow up:** Not stated (end of intervention period?). **Mental well-being measure(s):** Profile of Mood States (POMS). **Power calculation:** None reported, but significant findings provide some justification a posteriori.	Results are reported for the POMS dimensions of tension, vigour, depression, fatigue, anger and confusion. Where interaction effects occurred between age x gender x group, the results are presented for males </= 72 and >72 and females </=72 and >72. No n is reported for these subgroups. The standard error is reported, not the standard deviation. For vigour there was a significant gender x group interaction; men experienced significantly more vigor post intervention (m=1.60, se=0.70, effect size=0.55) compared with men in the control group (m=-2.18, se=0.76, effect size=-0.74), who experienced significantly less (p=.01). Older men in the control group experienced a significant increase in anger (m=1.97, se=0.83, effect size=0.98) relative to the same aged men in the intervention (m=-0.45, se=0.76, effect size=-0.22; p=0.03). In the younger men there was a significant decrease in anger in the control group (m=-1.53, se=0.67, effect size=-0.76) compared to the exercise group (m=0.90, se=0.59, effect size=0.44; p=0.01). There was also a significant effect for confusion, with the older females in the exercise group having greater confusion (m=2.83, se=0.93, effect size=1.51) and the control group having lower confusion (m=-0.52, se=0.48, effect size=-0.28; p=0.01). **Adverse effects:** There is a suggestion that the exercise made the older females more confused.	Randomisation procedure is unclear. POMS mood score not presented. Strengths - the study recruitment procedures which used the Medicare beneficiary list achieved a more representative sample than has been enrolled in previous exercise studies with volunteer subjects. Weaknesses: while low take-up rate is presenting weakness, low level of professional supervision may be a cause. Some respondents were reluctant to progress with the thickness of the band used in the exercise programme. The authors suggest that home based exercise programmes with people in the 70s and 80s may require more supervision. They suggest that future work should explore why women participants did not respond to the programme as well as men, to identify possible negative implications of programme terminations, and find adaptive strategies for maintaining involvement and commitment to the exercise programme even after the formal study is completed. They also suggest that future studies may also benefit from tailoring the exercises more to individual needs, implementing specific behavioural strategies to progress in the programme, and working more with participants to set realistic but challenging goals. **Applicability:** Although conducted in the USA the intervention is likely to be applicable to similar populations and settings in the UK. However the differences between healthcare systems in the USA (Medicare) and the UK should be considered.

Study Details	Intervention and population details	Analyses	Results	Comments
Kerse et al. 2005 Cluster RCT + **Objective**: How effective is the Green Prescription physical activity counselling program in increasing physical activity and quality of life in older community-dwellers? **Recruitment:** All primary care doctors in the Waikato region were invited to participate, 74% (117 out of 159 doctors from 42 practices) completed. Rolling recruitment proceded over a 12 month period. All patients aged 40 to 80 were screened for physical activity as they entered each practice over a week of recruitment. **Setting**: Primary care practices. **Country:** Waikato region, NZ. **Funding Source**: NZ National Heart Foundation, Waikato Medical Research Foundation, Royal New Zealand College of General Practitioners' Research and Education Charitable Trust, National Heart Foundation Fellowship & Harkness Fellowship from Commonwealth Fund.	The intervention is the Green Prescription counselling programme, randomised across primary care services. Patients in intervention practices prompted their primary care doctor or practice nurse to deliver brief activity counselling using motivational interviewing. The individualised advice was given to the patient and faxed to exercise specialists at regional facilities. Phone support was given from trained exercise specialists approximately 3 times over the following 3 months. (GP's were previously provided with training from specialised trainers). **Providers/Deliverers:** GPs, practice nurses and trained exercise specialists conducted follow-up. **Length**: N/A **Duration**: 3 months **Intensity:** N/A **Comparator:** Usual care from their primary care doctors. **Population details** **Inclusion**: 65 plus, community-dwelling, sedentary. **Exclusion:** unable to comprehend the informed consent; suffering from unstable cardiovascular, debilitating or progressive illness. **Unit of allocation**: individual **Total** n = 270 **Intervention**: n= 130 **Comparator** n = 140 **Gender**: overall M 15%: F 85%. IV group M 12%: F 88%. C group M 17%: F 83%. **Mean age (range):** overall mean age = 71.6 ± 4.4. IV group mean age 71.0 ± 4.1. C group mean age 72.2 ± 4.5. **SES:** Not reported.	**Baseline comparability:** Yes in terms of demographics and baseline activity characteristics. **Attrition** **Number of participants completing study** 13% of over 65s dropped out of the study. n = 233, 87% **Reasons for non-completion** None given. **Process details** **Data collection methods** Interview, and telephone follow-up support. **Statistical methods** The analyses in the paper are post-hoc sub-group analyses of people aged 65+. Random-effects generalised least squares regression model. **Unit of analysis:** Individual. **Unit of allocation:** individual **Time to follow up**: 12 months **Mental well-being measure(s):** SF-36 mental health factor (not the overall component summary score) and vitality dimension. **Power calculation**: unclear	Comparing the change in the intervention group score over 12 months compared with the change in the control group score found a significant incremental change for vitality (change =4.43, ci=0.31-8.54, p=.04). No means for the 12 month follow up are reported (baseline ones are reported). No significant between group difference was found for mental health and the change over 12 months in intervention score compared with control group score was not significant (change =2.16, CI=-1.14-5.46, p=.20) **Adverse effects:** none	It is a concern that 117 GPs recruited only 270 participants. The authors suggest the generalisability to other countries with differing health systems may be limited. Further research evaluating the sustainability of the screening and delivery process in differing systems is needed to better understand the best way of implementing such an intervention widely, taking into consideration aspects of differing health systems **Applicability:** Although conducted in New Zealand the health care systems between there and the UK share some similarities. The intervention could be applied to similar populations and settings in the UK..

Study Details	Intervention and population details	Analyses	Results	Comments
King et al. (2000). RCT + comparing 2 active interventions **Objective**: To evaluate the effectiveness of different types of physical activity on physical functioning and health-related quality of life. **Recruitment:** Random digit dial telephone survey Sunnyvale residents. 1,347 age eligible initially contacted. 795 (52%) ineligible, 588 (38%) refused. 103 agreed. **Setting**: Organised groups and alone at home. In the community. **Country:** Sunnyvale, California, USA **Funding Source**: National Institute on Aging	2 exercise interventions both organised sessions once a week and home exercise twice a week with assisted videotape: 1. Fit and firm aerobic and strength training and muscle toning. 2. Flex and stretch relaxation and stretching with music. **Providers/Deliverers:** Self administered at home, and in class situation once a week, administered by instructors. **Length**: Classes 1 hour, home 40 minutes **Duration**: 6 months **Intensity:** Class once a week, home twice a week **Comparator:** Comparisons between intervention groups, no control group. **Population details** **Inclusion**: 65 years older, absence of cardiovascular disease or stroke, regularly active no more than 2x week, free of musculoskeletal problems, stable on all medication for last 6 months. **Exclusion** too physically active. **Unit of allocation**: individual **Total** n = 103 **Intervention**: after drop out: fit and firm 50 (33 women and 17 men **Comparator** after drop out: stretch and flex 46 (29 women and 17 men) **Gender**: before drop out: 67 women and 36 men **Mean age (range):** above 65 years, mean 70 ± 4 years **SES:** Not reported	**Baseline comparability:** Randomised, the population beforehand was balanced. **Attrition** **Number of participants completing study** 8% dropped out from the Stretch & Flex group, 6.6% dropped out from the fit and firm condition. 96/103 **Reasons for non-completion** No, just described exercise adherence. **Process details** **Data collection methods** self reported scales **Statistical methods** Descriptive statistics, ANOVA, ANCOVA and MANCOVA **Unit of analysis** Individual **Unit of allocation:** individual **Time to follow up**: 12 months from randomisation **Mental well-being measure(s):** Medical Outcome Study (MOS) which included emotional/wellbeing measures. Sense of Mastery and self-esteem. **Power calculation**: No calculation but the study is weaker than the authors implied.	The stretch and flex group improved on the MOS emotional well being scale ($t = 2.18$, $p < .034$, two tailed). For women the pre test m=79.5 (17.5) 12 month change: m= 5.4 (11.4); for men the pre-test m=81.6 (12.7) 12 month change: m = 1.3 (13.8). There were no changes to emotional wellbeing for the fit and firm group women pre-test m= 80.2 (13.1),12 month change m=1.8 (11.2), for men pre-test m=82.9 (12.5) 12 month change: m= 0.0 (8.2). There were no significant changes at 12 months for either group on the measures of sense of mastery or self esteem. Sense of Mastery score for the fit and firm group women pre-test m= 68.6 (22.0), 12 month change: m= -3.0 (15.7),men pre-test m=74.4 (17.9) 12 month change: m= 0.5 (13.2). For the flex and stretch group women pre-test m= 72.9 (17.9) 12 month change m= (10.5); for men pre-test m= 77.2 (16.6) 12 month change m= -2.7 (13.4). Means for self esteem for fit and firm women pre-test m= 80.1 (13,7) 12 month change m= -0.5 (12.1), for men pre-test m=80.1 (17.2) 12 month change m= 2.5 (11.3); in the flex and stretch scores for self esteem women pre-test m= 78.5 (17.9) 12 month change m = 2.5 (9.5), men pre-test m=84.2 (13.4) 12 month change m= -0.1 (8.6). **Adverse effects:** none	No control group to test effectiveness of the intervention against no intervention. However, no between-group differences and few within group changes were found for those scales constituting the psychological functioning portion of the perceived functioning and well-being domain. The only indications of improvement over time were for the MOS energy/fatigue scale for which the fit and firm group reported significant pre-post test improvements and the MOS emotional well-being scale for which the stretch and flex group reported significant pre-post test improvements. **Applicability:** Despite good recruitment efforts the study reflects individuals who voluntarily agreed to take part, which limits generalisbility. The authors acknowledge that their participants may have been more aware of health issues and more motivated to exercise than the general population. Consequently although undertaken in the USA the intervention is likely to be applicable to similar populations in the UK (65+ and relatively healthy).

Study Details	Intervention and population details	Analyses	Results	Comments
Kjos & Etnier (2006) Single group before and after - **Objective:** How comparable are qigong and self-paced walking in the interest of establishing qigong as a moderate-level exercise modality for older adults? **Recruitment:** Volunteers were recruited from existing qigong classes in Arizona, USA. **Setting:** Qigong - not stated; Walking - around the inside of a full sized gymnasium **Country:** Phoenix, Arizona, USA **Funding Source:** Not reported	8 qigong exercises were taught to and performed by participants. Participants were instructed to perform the exercises at their own pace and not to speak or interact with anyone during the exercise. A pre-recorded instruction video was also provided. **Providers/Deliverers:** Unclear, but involves an instructional video tape. **Length:** 22 minutes. **Duration:** 1 session of each exercise modality (testing 3 days apart). **Intensity:** moderate. **Comparator:** Self-paced walking around a full-sized gymnasium. Participants were asked not to interact or speak with each other. **Population details** **Inclusion:** Female, aged 55+, ability to participate in moderate intensity exercise, familiar with the qigong exercises. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** n = 19. **Intervention:** Not reported. **Comparator:** Not reported. **Gender:** 100% female. **Mean age (range):** 55-79 years. **SES:** Not reported.	**Baseline comparability:** N/A - same group performed two exercise modalities. **Attrition** **Number of participants completing study:** n = 15. **Reasons for non-completion:** Recent surgery, scheduling difficulties, forgetting to attend a session. **Process details** **Data collection methods:** Self-report. **Statistical methods:** Repeated measures ANOVA. **Unit of analysis:** Individual **Time to follow up:** 45 minutes post exercise. **Mental well-being measure(s):** Positive and negative affect schedule (PANAS) - 20 item self-report inventory used as a measure of positive affect (PA) and negative affect (NA) **Power calculation:** None presented	No significant differences were found as a function of exercise condition F (1, 14) = .93, p = .35, n squared = .061-Beta = .15. or as a function of the interaction of exercise condition by time. A significant main effect was found for time F (2, 14, 30.00) = 8.68, p < .001, n squared =.38, 1- Beta = .96, such that PA increased from pre-exercise (33.43 se=- 2.04) to immediately post exercise (34.20 se=- 1.71) and then gradually decreased during the recovery period (15 min post, 31.03 se=1.98; 30 min post, 29.03 se=- 2.03; 45 min post, 28.73 se=- 2.29). Negative affect was not affected by the exercise condition or time. **Adverse effects:** None reported	The sample size is small. The design is poor. There is a risk of contamination from the ordering of the interventions. These were not balanced. Participants were already practicing Quijong – selection bias. Relatively small sample size limits statistical power. The authors suggest that the non-significant effects are indicative of the variables being affected similarly by walking and qigong. . Low statistical power limits generalisability **Applicability:** The methodological weaknesses mean that the findings of the study should not be generalised to a UK population.

Study Details	Intervention and population details	Analyses	Results	Comments
Kocken & Voorham (1998). Controlled Before and After – **Objective**: Was the course 'Successful Ageing' effective in improving the determinants of social participation, social support and well-being of its members? **Recruitment:** All 10 454 independently living inhabitants aged between 55 and 79 (23% of the Ridderkerk citizens) were invited, by letter, to participate in 'Successful Aging'. The invitation was signed by the alderman for elderly affairs and public health. In addition, flyers and posters were distributed and a local newspaper gave free publicity. 320 expressed an interest. **Setting**: The course was given in an easy to reach centre where many activities for seniors take place. Enrolment was free. **Country:** Rotterdam, The Netherlands **Funding Source**: Not stated	The course was designed to encourage participation in health promotion activities, and changing participants' behaviours in health risk areas. The first session started with a general discussion of the determinants of successful ageing. Following that the group was free to discuss which topics they wanted at the subsequent sessions. They chose sleeping problems, memory problems, use of medicines, housing of older adults, osteoporosis, physical exercise and growing old in different cultures. **Providers/Deliverers:** Senior health educators who were peers aged 55 and over. **Length**: Not stated **Duration**: Four weeks **Intensity:** Once a week **Comparator:** The control group who did not receive anything. **Population details** **Inclusion**: independent older adults aged 55-79 years. **Exclusion** **Unit of allocation** 150 individuals were allocated to the experimental group in the order in which applications were received. **Total** n = 320 **Intervention**: **Comparator** **Gender**: Experimental group - 37% male and 63% female; control group 39% male and 61% female. **Mean age (range):** 55-79 **SES:** Occupational level of the experimental group - 33% low, 32% moderate, 35% high. Occupational level of the control group - 45% low, 34% moderate, 21% high.	**Baseline comparability:** The experimental and control group did not differ significantly for gender, age, marital status, physical limitations and SES. **Attrition** **Number of participants completing study** 138 **Reasons for non-completion** None given **Process details** **Data collection methods** self report (postal questionnaires) **Statistical methods** MANOVA **Unit of analysis** Group **Unit of allocation**: individual and group **Time to follow up**: The group completed assessments immediately after completing the course and three months after termination. **Mental well-being measure(s):** General self efficacy; Dutch scale for wellbeing of the elderly. **Power calculation**: No calculation but the study was powered to detect an effect if one existed.	There were no effects of the programme on either self-efficacy or general well-being. **Adverse effects:** no	Good attempts were made to recruit a random sample, however the study was affected by high levels of drop out. Regarding the lack of effect on well-being and self-efficacy, the authors suggest that the measures might not be sensitive enough, or that there could be a 'ceiling effect' present in the participants. The authors suggests a further study into the determinants of social participation. **Applicability:** Although conducted in the Netherlands the intervention is likely to be applicable to similar populations and settings in the UK

Study Details	Intervention and population details	Analyses	Results	Comments
Kremers et al. (2006). RCT - **Objective:** Do single women, 55 years of age and older, improve with regard to self-management ability, well-being, and social and emotional loneliness after having participated in as newly designed self-management group intervention? **Recruitment:** Adverts in local newspapers. Those interested were asked to respond by phone if they missed having people around them, wished to have more friends, participated in very few leisure activities, or had trouble initiating activities **Setting:** Not reported **Country:** Two regions of the Netherlands **Funding Source:** The Stichting Sluyterman van Loo and the University of Groningen.	The intervention is a self management group intervention. Six core theoretically based self management abilities are developed. 1) the ability to take initiatives in making friends 2) the ability to be self efficacious with regard to one's own behaviour in making friends and being a friend 3) the ability to invest in the friendship 4) the ability to have a positive frame of mind 5) the ability to find and maintain multi-functionality in a friendship 6) the ability to take care of variety. **Providers/Deliverers:** Two female leaders **Length:** 2 1/2 hours **Duration:** 6 weeks **Intensity:** n/a **Comparator:** no treatment **Population details** **Inclusion:** Single community dwelling women age 55 plus who missed having people around them, wished to have more friends, participated in very few leisure activities, or had trouble initiating activities **Exclusion:** Not reported **Unit of allocation:** Individual **Total:** N = 142 total. **Intervention:** n = 63 IV. **Comparator:** n = 79 C. **Gender:** 100% women **Mean age (range):** IV m=62.8, sd=6.4. C m=65.2 sd=7.6 **SES:** Not reported	**Baseline comparability:** No significant differences on the baseline characteristics of age, marital status, children or physical function of the IV and C groups **Attrition** **Number of participants completing study:** 36 IV and 62 C = 98 total (92 of 142 at baseline = 64%) **Reasons for non-completion:** Some felt the intervention was too much of a mental or physical burden. Some felt they did not fit in with the group, others felt they did not learn anything new from IV. Others were ill, had doubts about participation, or were unable to schedule the intervention in their agenda **Process details** **Data collection methods:** Self-report questionnaires **Statistical methods:** Hierarchical regression analyses **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** 6 months post baseline **Mental well-being measure(s):** Well-being - Social Production Function Index Level Scale (SPF-IL). 15 items with 5 sub-scales, comfort, stimulation, affection, behavioural confirmation, and status each containing 3 items. **Power calculation:** Not reported.	Hierarchical regression revealed: scores at T0 (baseline) significantly predicted 43% of the variance at T1 (post intervention, 6 weeks post baseline) (F change (1,103) = 78.23, $p < 0.001$). Higher scores on the SPF-IL at T0 resulted in higher scores on the SPF-Il at T1 (Beta = 0.66, $p < 0.001$). Condition (IV or C) entered into step 2 of the equation contributed significantly to the model (F change (1,1020 = 7.90, p < or equal to 0.01), and yielded an increase of 4% of the explained variance. Women who completed the intervention scored higher on the SPF-IL at T1 than controls (Beta = 0.20, $p < 0.01$). **Adverse effects:** None reported.	No power calculation presented. The study supports previously reported findings in similar studies. Possible selection bias due to recruitment based on self-selection No mention of blinding, concealment and intention to treat analysis. Valid measures used **Applicability:** Although conducted in The Netherlands the intervention is likely to be applicable to similar populations and settings in the UK. The methodological limitations indicate the broader application is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
Kutner et al. (1997) Controlled non-randomised trial + **Objective**: To examine the self reported benefit of Tai Chi in older adults. **Recruitment:** Not reported **Setting**: Not stated but was a group intervention **Country:** Atlanta USA **Funding Source**: NIH co-operative from the National Institute of Aging	The intervention is part of the FICSIT studies (Frailty and Injuries: Cooperative studies of intervention techniques). There are two exercise interventions a) Tai Chi group and b) Balance training group (BT), participants placed on platform in which multiple force transducers were embedded. **Comparator:** Education control group (ED) where participants met to discuss health related topics. This group was asked not to change the usual exercise regime. **Providers/Deliverers:** Instructor **Length**: 45 minutes **Duration**: 15 weeks **Intensity:** TC 2x week, BT and ED 1 x week. **Population details** **Inclusion**: 70 years or older, ambulatory and community living. **Exclusion:** severe cognitive impairment, and physically debilitating conditions. **Total** n=200 (figures only provided for the final 130 who gave responses at 4 month follow up). **Intervention**: TC n=51, BT n=39 **Comparator** ED n=40 **Gender**: . 81% female **Mean age (range):** m=76.2 yrs. **SES:** 80% had at least a college education.	**Baseline comparability:** No significant differences between groups at baseline. **Attrition** **Number of participants completing study** 160 out of 200 completed the intervention but only 130 gave responses to exit interview questionnaires. **Reasons for non-completion** None reported **Process details** **Data collection methods** Interview **Statistical methods** logistic regression and ANOVA **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up**: 4 months **Mental well-being measure(s):** mastery index, individual question on sense of confidence, self-esteem scale, mental health component from the SF36. **Power calculation**: None reported	In response to the question on sense of confidence 55% of the tai chi group, 62% of the computerised feedback balance training and 28% of the education group reported an improvement. The results of the logistic regression found that in comparison to the educational control group, the tai chi group were more likely to report a beneficial effect in their sense of confidence (OR=3.21, CI=1.32,7.79, p<.01). The same effect was found for the balance group in comparison to the educational control group (OR=4.22, (CI=1.64, 10.88). There were no significant differences over time for self-esteem in the tai chi group pre m=7.9 (2.3) post m=8.2 (2.1) follow-up m7.9 (2.1); in the balance training group pre m=8.0 (2.1) post m= 8.2 (2.2.) follow up m=8.2 (2.2) and in the educational controls pre m=7.8 (2.3) post m=8.0 (2.4) follow up m=8.3 (2.3). There were no significant differences over time for the SF-36 mental health factor for the tai chi group pre m=83.0 (27.0) post m=85.3 (26.2) follow up m=80.4 (32.8); for the balance training group pre m=76.9 (32.6) post m=78.6 (29.1) follow up m= 77.8 (29.9) or for the educational controls pre m=75.0 (36.0) post m=70.9 (35.2) follow up m=74.2 (33.3). **Adverse effects:** None reported	The authors note that the participants showed a pre-existing interest in health matters. Results for all measures are not reported. No control group in that all received some intervention. Unclear as to the overall response rate or why people dropped out. **Applicability:** Intervention is appropriate to the target population and culturally transferable.

Study Details	Intervention and population details	Analyses	Results	Comments
Li et al. (2002). RCT+ **Objective**: Hypothesis: Compared to a control group, individuals who were in the Tai Chi group would increase in self-esteem over the course of a 6-month study period. **Recruitment:** Local newspaper advertisements and flyers at senior centres. **Setting**: Not specified but suggest community based. **Country:** Not stated: researchers are based USA **Funding Source**: National Institute on Aging (Grants AG18394 and AG17053)	Tai chi intervention (classical Yang style) **Providers/Deliverers:** Not specified **Length**: 60-minute (consisting of 15 minute war-up and 30 minute of Tai Chi practice, followed by a 15 minute cool-down). Repeated twice a week **Duration**: 6 months **Intensity:** Not specified **Comparator:** Participants were instructed to maintain their routine activities and not to begin any new exercise programs. Put on waiting list for a 4-week Tai Chi programme at the end of the study. **Population details** **Inclusion**: Age 65 years or above; low active (defined as non-involvement in a regular exercise programme - either structured or unstructured) in the month prior to participation in the study and verified by a brief instrument designed specifically to assess physical activity in older persons; health to the degree that participation in an exercise programme would not exacerbate any existing symptomology (determined by participant self-report); and willingness to be randomly assigned to treatment conditions. **Exclusion:** Not specified **Unit of allocation**: individual **Total:** N = 98 **Intervention**: n = 53 **Comparator:** n = 45 **Gender**: 88% female in intervention group; 92% female in control group **Mean age (range):** Mean = 73.2 years (S.D. 4.9) **SES:** None	**Baseline comparability:** T-tests or chi-square tests comparing participants in the intervention and control group indicated that the two conditions did not differ significantly (p=>.1) at baseline on any of the demographic measures involving age, gender, income and education. In addition, there were no significant differences (p=>.13) by group in self-esteem at baseline. **Attrition** **Number of participants completing study:** N= 72 (77%). N=9 (18% dropped out in intervention). N=13 (29%) dropped out of control. Average attendance rate (2 time per week, with a total of 48 possible session) in the intervention group was approximately 90% with a median compliance of 41 sessions and a range of 29 to 47 sessions. **Reasons for non-completion:** Participants in the intervention group dropped out due to travelling, time conflict with class and family-related commitments. Control group drop out was due to reluctance to wait to join the class at the end of the study. **Process details** **Data collection methods:** Self-report **Statistical methods:** Growth curve analysis. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up**: Within a week of completion of last class. **Mental well-being measure(s):** Global self-esteem assessed using the Rosenberg (1965) self-esteem scale	Compared to the control group, the results indicate a general increase in self-esteem over time for the Tai Chi group (no analysis of mean differences is presented). Intervention group: baseline m=32.31 (SD= 4.061); middle m=35.00 (SD=3.823); post intervention m=35.225 (SD= 3.939). Control group: baseline 31.067 (SD=4.807); Middle m=32.5 (SD=4.554); post intervention m=32.719 (SD= 4.510). The degree to which esteem differences in the two conditions vary across time show statistically significant (p=<.001) improvement of Tai Chi group for global self-esteem (Growth curve results - group x time interaction β = .23). **Adverse effects:** None reported **Power calculation**: No but weak	The sample may not be representative of the population as a whole - selection bias toward those that read newspapers and those who live in or visit certain locales in the community. The study fails to consider the question whether Tai Chi has the same effect as generic exercise **Applicability:** Although conducted in the USA the intervention is likely to be applicable to similar populations or settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Li et al. (2004) RCT + **Objective**: What effect does tai chi have on self-rated sleep quality and daytime sleepiness in older adults reporting moderate sleep complaints **Recruitment:** Community-wide promotion, including adverts in local newspapers, churches, senior centres, senior residences and referrals. **Setting**: local churches and senior (retirement) residential housing complexes **Country:** Eugene-Springfield area, Oregon **Funding Source**: National Institute of Health, National Institute of Mental Health	24-week tai chi programme involving multidirectional weight shifting and movement coordination. **Providers/Deliverers:** Instructor taught **Length**: 1 hour **Duration**: 24 weeks **Intensity:** Low energy though frequent **Comparator:** 24 week low impact exercise programme. 1 hour sessions 3 per week. Predominantly seated exercises, controlled breathing, stretching and relaxation. Comparable to tai chi apart from considerably less meditation components **Population details** **Inclusion**: age 60 +; inactive; healthy; physician approved; willing to be randomly assigned; no clinically diagnosed condition; moderated sleep condition **Exclusion:** use of sleep medication more than once a week; receiving sleep disorder treatment; cognitive impairment; consumption of more than 7 alcoholic beverages per week or smoking more than 10 cigarettes per day. **Total** n =118 **Intervention**: n= 62 **Comparator** n=56 **Gender**: Male = 52%, female=48% **Mean age (range):** M= 75 sd= 7.8 **SES:** not reported	**Baseline comparability:** balanced for age, sex distribution, education, physiological measures, physical activity, health, sleep measures. **Attrition** **Number of participants completing study** 48 in IV group (77%), 43 in C group (77%) **Reasons for non-completion** medical problems unrelated to the study, personal reasons related to the study, resumed sleep medication, death, relocation **Process details** **Data collection methods** self-report questionnaires **Statistical methods** ANOVA on baseline demographic descriptors, chi-square, repeated measures ANOVA, ANCOVA **Unit of analysis** Individual **Unit of allocation:** Individual **Time to follow up**: 6 months **Mental well-being measure(s):** SF-12 mental health component **Power calculation**: A sample size of 45 participants in each group was estimated to provide more than 80% power to detect between group mean differences of 2 +- 3.0 points for the PSQI global sleep quality index, 10 +- 15 minutes for the sleep latency index, and 45 +- 1.5 minutes for sleep duration index after 24 weeks	Both groups demonstrated significant improvement in the SF-12 mental component summary score from baseline to 6 months. Tai chi mean change =5.09, sd=19.13, p=.04. Low impact exercise group mean change = 5.56, sd=20.81, p=.05. There were no differences between the change scores for the tai chi group and the low impact exercise groups CI=-0.47 (-7.76-6.81) p=.89. **Adverse effects:** None reported	Targeted individuals with self-reported sleep complaints not clinically diagnosed complaints. Reliance of self-report. Used two experimental groups, no non-treatment group. Lack of ethnic minority representation. Well educated participants. **Applicability:** Although conducted in the USA the results indicate that both the Tai Chi and the low impact exercise programme are likely to be applicable to similar populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Lucchetti & Cerasa (2002) Single group programme evaluation - **Objective**: To investigate the effects of a campaign of health education on the subjects of disease prevention in ageing and the promotion of well-being. **Recruitment:** Not reported **Setting**: Not clear. Participants attended classes. **Country:** Italy **Funding Source**: Ministry of Health	Not clear - 'a campaign of health education' **Providers/Deliverers:** Not clear **Length**: Not reported **Duration**: Not reported **Intensity:** Not reported **Comparator:** n/a **Population details** **Inclusion**: none stated **Exclusion** none stated **Unit of allocation**: not stated **Total** 430 filled in the first questionnaire (89.3% valid), and 390 filled in the second questionnaire (83.1% valid). These are not pre and post test questionnaires. **Intervention**: n/a **Comparator** n/a **Gender**: not stated **Mean age (range):** not stated - says 'third age' **SES:** Not stated	**Baseline comparability:** Not applicable, only the intervention group. **Attrition** **Number of participants completing study** not clear as the authors do not say how many started **Reasons for non-completion** None given **Process details** **Data collection methods** Not clear, although a questionnaire is mentioned in the text. **Statistical methods** Not clear **Unit of analysis** Individual **Unit of allocation:** not stated **Time to follow up**: Not stated **Mental well-being measure(s):** Satisfaction with life (no reference to which scale, does not appear to be a validated measure). **Power calculation**: none	These need to be treated with caution. The paper lacks the necessary detail to make a judgement about the appropriateness and effectiveness of the analysis. The authors report that for overall satisfaction with life, there was a 2.4% increase at 6 months. **Adverse effects:** Not clear	The paper is of extremely poor quality and does not help answer the question of the review. In light of the quality of the paper, the authors' perspectives are unlikely to provide an informed and objective opinion. **Applicability:** There is not enough information to determine generalisability.

Study Details	Intervention and population details	Analyses	Results	Comments
McFarlane et al. (2005) CBA- **Objective**: What effect does Tai Chi training have on perceived change in physical and mental health in 38 Hong Kong Chinese older women? **Recruitment:** After a seminar about the importance of physical exercise, people were invited to participate in the Tai Chi exercise programme. Those who agreed became the intervention group, those who declined were asked to be the control group. **Setting**: Not reported, although probably the community centre from which participants were recruited **Country:** Hong Kong **Funding Source**: None reported	Tai Chi training program involving three, 45 minute sessions per week, over the entire 3 month intervention period. 10 minute warm-up, 25 minutes of Tai Chi practice, and 10 minute cool down. **Providers/Deliverers:** Experienced Tai Chi practitioner **Length**: 45 minutes **Duration**: 3 months **Intensity:** 3 times per week **Comparator:** No treatment - participants advised to continue their usual physical activities. **Population details** **Inclusion**: Living in the community, living independently, having no major neurological or musculoskeletal diagnosis that could result in loss of balance or fall, no cognitive impairment. **Exclusion:** None reported **Unit of allocation**: Individual **Total:** N = 38 **Intervention**: n = 15. **Comparator: n = 23.** **Gender**: 100% female. **Mean age (range):** Age 65 and older (mean 72.9 +/- 5.5 years). Range not reported. **SES:** Not reported	**Baseline comparability:** Yes, balanced on 7 of 9 measures, including age, mass, height, BMI, physical activity, psychological well-being, and muscle strength. They were not similar on balance and hamstring flexibility. **Attrition** **Number of participants completing study:** Not reported **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Physical and psychosocial assessment (unclear as to whether this is self report or interviewer obtained). **Statistical methods:** Bivariate analyses, t tests and chi square tests, ANCOVA **Unit of analysis:** Group **Unit of allocation:** Individual and community - Community centre for the elderly in Hong Kong **Time to follow up**: 3 months after baseline **Mental well-being measure(s):** Perceived well-being scale, designed including 14 items of mental and physical function. Diener Satisfaction with Life Scale **Power calculation**: None reported	The paper reports mean change scores. These are not significant for life satisfaction. For the perceived well being scale, the mean change = 18.5, S.D. = 13.8 and control mean change = 6.9, S.D. = 8.7 (F = 16.81, p = 0.00). The authors state that there is a 13.5% overall change in well-being for the intervention when compared to the control. **Adverse effects:** None reported	The study has a small sample and it is difficult to draw any firm conclusions. Also the participants chose to undertake the intervention, suggesting that if random allocation procedures had been used the results could be affected. There is no reporting of validation for the Perceived well being scale. **Applicability:** The applicability in other populations is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
Markle-Reid et al. (2006) RCT ++ **Objective:** To evaluate the comparative effects and costs of a proactive nursing health promotion intervention in addition to usual home care for older people compared with usual home care services alone. **Recruitment:** Participants were recruited from people aged 75 and over who were newly referred to the Community Care Access Centre for personal support services. Informed consent was obtained. Of the 577 eligible home care clients, 288 agreed to take part. The response rate was 49.9%. **Setting:** Own home **Country:** Canada **Funding Source:** The Canadian Health Services Research Foundation, The Ontario Ministry of Health and Long-Term Care, The Community Care Access Centre of Halton, The McMaster University, System Linked Research Unit on Health and Social Services Utilisation.	Proactive nursing health promotion intervention in addition to usual home care (home care described under comparator). The goal of the intervention was to bolster the participant's personal resources (through health assessment, managing risk factors and providing health education about lifestyles and disease management. this involved participatory empowerment strategies to promote positive attitudes, knowledge and skills) and environmental supports (through referral to and co-ordination of community services, building a trusting supportive and meaningful relationship with the client and their carer and providing caregiver support) in order to reduce the levels of vulnerability, enhance health and QOL, and reduce the on-demand use of expensive healthcare resources. **Providers/Deliverers:** Registered Nurse **Length:** Average visit was 1 hour **Duration:** 6 months **Intensity:** Participants randomised to the nursing group received a median of 5 home visits and one telephone contact. **Comparator:** The intervention was compared with usual homecare services. This consisted of case management, personal care, home support, nursing, occupational therapy, physiotherapy, social work and speech language therapy through community based agencies. **Population details** **Inclusion:** Aged 75+ and newly referred to the Community Care Access Centre for personal support services. **Exclusion:** Refusal to give informed consent; unable to understand English; deemed eligible for nursing services. **Unit of allocation:** Individual. **Total:** N = 288. **Intervention:** Group 1 n=144 **Comparator:** Group 2 n=144 **Gender:** 23% males, 77% female **Mean age (range):** m=83.82, sd=5.37 **SES:** 87% had incomes below $40,000; 13% above.	**Baseline comparability:** Compared to the usual care group participants in the nursing group reported lower scores in mental health functioning at baseline (mean difference -10.6; 95% CI 5.13, 16.07) **Attrition** **Number of participants completing study: More than 80% in both groups** **Reasons for non-completion:** Death, unable to locate the participant, physically unable to participate and refusal. **Process details** **Data collection methods:** Structured interviews **Statistical methods:** Chi square, Kruskal-Wallis, independent t tests and repeated measures ANOVA **Unit of analysis:** Individual **Time to follow up:** 6 months **Mental well-being measure(s):** SF-36 **Power calculation:** The sample size was calculated to detect a clinically important difference in five points in mean change scores between groups in the SF-36 mental health component summary score. A sample size of 276 (138 per arm) was estimated to be sufficient, including an allowance of an additional 20% to offset drop outs. (Two tailed alpha -0.05; beta=.20).	There was a significantly greater improvement from time 1 to time 2 (F=6.93, p=.009) in the mental health component summary score in the nursing group than in the usual care group (mean difference -6.32, 95% CI -11.4 and -1.59). Participants in the nursing group also had an increase in the mental health functioning score (F8.17, p=.005) from time 1 t time 2 compared with a reduction in the same score for the usual care control group (mean difference -7.46; CI-12.60, -2.32). There was no statistically significant difference between the two groups in the mean costs of all types of health and social services, and the total annual per person direct costs of health services at 6 months (chi square = 0.01; d.f.=1, p=0.97). There was a statistically significant lower per person cost of prescription medications in the nursing group compared with usual care (chi square=5.718, df=1, p=0.017) (*The study found improvements in other measures that are not within the remit of this review). **Adverse effects:** None reported	The study is well conducted and well-reported. It should be noted that participants in the nursing group has poorer mental health than the usual care group at baseline, but improved more than the usual care group on this measure. Strengths - sample size, high retention and engagement rates. Weakness - those who dropped out had lower functioning than those who were retained. **Applicability:** The study was conducted in urban area and it is unclear if the results may be transferable to rural or other environments. However given that the intervention is delivered at home the beneficial effects could be obtained through home care delivery in the UK. The intervention is then likely to be applicable to people in the UK iwho are in receipt of social care or other support services at home.

<table>
<tr><th>Study Details</th><th>Intervention and population details</th><th>Analyses</th><th>Results</th><th>Comments</th></tr>
<tr>
<td>Martina & Stevens (2006)
CBA –

Objective:
Does participation in the friendship enrichment programme result in significant improvements in self-esteem, and reduction in loneliness? Are participants in the program successful in improving their subjective well-being in terms of life satisfaction and frequency of positive and negative feelings?

Recruitment:
Local newspaper articles and distribution of folders describing the programme. Additional control group members were recruited through an announcement about the study on a website for older people.

Setting: Not reported
Country:
Not reported. The researchers are from Radboud University in The Netherlands

Funding Source:
Programme organised by the local senior service agencies in four communities.</td>
<td>The friendship programme consists of 12 lessons focused on different topics related to friendship such as self esteem as a basis for friendship, improving existing friendships, setting goals and boundaries in friendships. The lessons included theory, practice in skills that are important in friendship, role-playing of difficult social situations and homework.

Providers/Deliverers:
Not clear - the programmes are organised by local older people's service agencies in four communities.

Length: Not reported
Duration: 9-12 months
Intensity: 12 lessons

Comparator: Wait list controls

<u>Population details</u>
Inclusion: Age 55 or older. Interested in participating in the friendship programme or in improving their friendships.

Exclusion: Not reported

Unit of allocation: Individual.

Total: N = 115 total.
Intervention: 60 IV.
Comparator: 55 C.

Gender: 100% Female.

Mean age (range): Range 53-86. Mean 63.

SES: Two thirds of the women experienced no financial stress and there were no significant differences in income.</td>
<td>Baseline comparability:
Balanced on age, marital status, education level, subjective evaluation of health , income, financial stress, use of medications, and restriction in activity. Does not address whether the groups were balanced on the outcome measures.
<u>Attrition</u>
Number of participants completing study: The response rate was 82%. 6% non-response at second round and 2% at third round.

Reasons for non-completion:
Natural causes (5%),others not recorded.

<u>Process details</u>
Data collection methods:
Data was collected by semi-structured interviews, with an average duration of 2 hours, at the respondent's home. Respondents were asked to fill in questionnaires after the interview.

Statistical methods:
Repeated measures ANOVA, Paired samples t test.

Unit of analysis: Individual.
Unit of allocation: Individual.

Time to follow up: 1) directly after the programme or 3 months after the first measurement 2)9-10 months after baseline.
Mental well-being measure(s):
Subjective well-being - Satisfaction with life scale (SWLS: Diener). Positive and Negative Affect Scale (PANAS) using 20 items, self esteem.

Power calculation: None presented.</td>
<td>Compared to the control group, the intervention group showed a significant increase over time for self esteem (F=3.03, p=.05).
<table>
<tr><th></th><th>M</th><th>SD</th></tr>
<tr><td>IV baseline</td><td>32.31</td><td>7.77</td></tr>
<tr><td>IV T1</td><td>33.86</td><td>6.49</td></tr>
<tr><td>IV T2</td><td>34.56</td><td>6.35</td></tr>
<tr><td>C baseline</td><td>37.53</td><td>6.48</td></tr>
<tr><td>C T2</td><td>37.62</td><td>6.68</td></tr>
<tr><td>C T3</td><td>37.56</td><td>6.54</td></tr>
</table>
A significant interaction effect was found for positive affect F (1,112) = 53.09, p < 0.05 with the intervention group increasing in PA over time whilst the control group decreased.
<table>
<tr><th></th><th>M</th><th>SD</th></tr>
<tr><td>IV baseline</td><td>30.83</td><td>4.19</td></tr>
<tr><td>IV T1</td><td>31.39</td><td>3.89</td></tr>
<tr><td>IV T2</td><td>31.34</td><td>3.82</td></tr>
<tr><td>C baseline</td><td>34.60</td><td>8.17</td></tr>
<tr><td>C T1</td><td>34.07</td><td>3.67</td></tr>
<tr><td>C T2</td><td>26.95</td><td>2.60</td></tr>
</table>
A significant interaction was found for negative affect F (1,112) = 23.45, p< 0.05), with the control group increasing in negative affect over time.
<table>
<tr><th></th><th>M</th><th>SD</th></tr>
<tr><td>IV baseline</td><td>29.46</td><td>5.37</td></tr>
<tr><td>Iv T1</td><td>27.64</td><td>5.41</td></tr>
<tr><td>IV T2</td><td>28.14</td><td>5.10</td></tr>
<tr><td>C baseline</td><td>25.98</td><td>4.65</td></tr>
<tr><td>C T1</td><td>25.20</td><td>4.20</td></tr>
<tr><td>C T2</td><td>29.25</td><td>3.44</td></tr>
</table>
Adverse effects:
None reported.</td>
<td>The data suggest that there were differences on the outcome measures at baseline, but the authors do not address this.

The authors suggest the Friendship Enrichment Program will be more successful if it is embedded in a program of activities and interactions that promote social contact on the one hand and supports meaningful ways of spending time alone on the other hand

Applicability:
This is a Dutch study with some methodological limitations which have implications for applicability to the UK. However loneliness is a universal issue which tends to be experienced more by women, therefore the intervention could be useful if adapted.</td>
</tr>
</table>

Study Details	Intervention and population details	Analyses	Results	Comments
Mathey et al. (2001) Controlled before and after - **Objective**: To determine the effect of an improved ambiance of food consumption on health and nutritional status of Dutch nursing home elderly residents. **Recruitment:** All patients on the 4 wards of the nursing home were invited to take part, 42/60 agreed, 38 of these were eligible. **Setting**: Nursing home canteen **Country:** Aeneas, Breda, the Netherlands. **Funding Source**: Not reported	The intervention was designed to improve ambiance at meal times and focussed on three areas - 1) physical environment and atmosphere of the dining room 2) meal situation 3) organisation of the nursing staff assistance. Two wards received the intervention. During the intervention the same meals were served in both groups and the usual meal pattern was maintained. Breakfast and supper were bread based meals and at noon a cooked meal was served. As part of the intervention flowers and plants were placed on tables with sufficient lighting, background music chosen by participants, tables dressed with cloths and dinner plates, nurses stopped cleaning at meal times, kept tidy and non-institutional by removing trays and covers from sight. more choice, continuous availability of tea, coffee and soft drinks, re-scheduling nurse time so enough nurses on duty at meal time, the nurses stopped walking around the room during dinner time. **Providers/Deliverers:** Nursing home **Length**: continuous, every meal time for 12 months. **Duration**: 12 months **Intensity:** 3 x daily, every meal time. **Comparator:** Two wards received normal practice and the original dining room setting was kept. **Population details** **Inclusion**: older than 65 yrs and resident in the home for more than 3 months at the start of the study. **Exclusion** parenteral nutrition and terminal phase of a disease, severe anaemia. **Unit of allocation**: group allocation by ward. **Total** n = 38 **Intervention**: n = 19 **Comparator** n = 17 **Gender**: 13 male and 25 female in total. For those that completed the study: In control group: 3 male and 7 female; Intervention group: 4 male and 8 female. **Mean age (range):** mean age of total = 82.2 (7.9 SD); control group mean age = 78.2 (7); Intervention group mean age = 82.6 (7.5). **SES:** not reported	**Baseline comparability:** Participants randomised. **Attrition** **Number of participants completing study** 22 completed - 10 control and 12 IV **Reasons for non-completion** 5 out of 7 non-completers died in the control group. 7 died in the intervention group and 2 were discharged from their nursing home. **Process details** **Data collection methods** Self-report **Statistical methods** Means and ± SD of baseline and absolute changes values were calculated per group for the outcome variables. Changes were compared by using an unpaired t test for differences between groups and by using a paired t test for difference between baseline and follow-up within groups. **Unit of analysis** Individual **Unit of allocation:** group allocation by ward. **Time to follow up**: 1 year from randomisation **Mental well-being measure(s):** Philadelphia Geriatric Center Moral Scale (PGCMS, 17 item.) **Power calculation**: none	Mean changes in PGCMS scores were relatively stable,, with -2 ± 19% for the control group and -3 ± 20% for the experimental group. There are no means and standard deviations reported at time 1 and time 2 for the two groups. (The authors report the intervention had a positive effect on dietary intake and mean body weight).. **Adverse effects:** none	High drop-out rate, although previous studies drawn upon to show that the death rate was normal for this population. No blinding may have biased results (although there is no evidence of this). Unclear if the participants were receiving other services that could impact on the outcome. High levels of attrition. **Applicability:** Although conducted in the Netherlands the intervention is likely to be applicable to similar populations in long term care settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Matsouka et al. (2005). Controlled non-randomised trial - **Objective**: Hypotheses - a) elderly persons' participation in a regular physical activity programme would d enhance mood states b) their individual mood enhancement would be correlated with the frequency of their participation in the programme. **Recruitment:** Advertised through local papers. The 78 responders were permanent residents in three towns **Setting**: Public Care Institute for the Elderly **Country:** Greece **Funding Source**: Greek Secretariat of Sport	An exercise programme of varying duration consisting of outdoor and indoor leisure activities and callisthenic exercises for the improvement of flexibility, general strength, and co-ordination as well as for the reinforcement of self esteem and self confidence. **Providers/Deliverers:** Unclear - states an instructor **Length**: 1 hour **Duration**: 12 weeks **Intensity:** Condition A - 3 x per week, condition B- 2 x per week, condition C 1 x per week, condition D no intervention. **Comparator:** Comparisons within each intervention group and the control group (pre and post test). 3 levels of the intervention plus one control of no intervention **Population details** **Inclusion**: Not involved in any physical activity for the previous 6 months. **Exclusion** Serious cardiovascular problems, respiratory or neurological diseases, or serious orthopaedic problems. **Unit of allocation**: individual and group: Recruitment - Subjects were permanent residents in three towns. **Total** n = 55. **Intervention**: 3 treatment groups of 15 people in each **Comparator** n = 10 **Gender**: 100% women **Mean age (range):** 60-75 years (m=64.8, sd=4.7) **SES:** 41.3% were degree graduates, 61.5% were retired.	**Baseline comparability:** Not reported **Attrition** **Number of participants completing study** All of the older recipients completed. **Reasons for non-completion** **Process details** **Data collection methods** Self-report **Statistical methods** Wilcoxon Test for Paired Groups **Unit of analysis** Individual **Unit of allocation:** individual and group **Time to follow up**: 12 weeks **Mental well-being measure(s):** A 12 item exercise induced feeling Inventory that assesses 4 dimensions; positive engagement, revitalisation, tranquillity, and physical exhaustion. **Power calculation**: none	After the 12 week training programme there was a significant effect of the intervention on mood state for the 2 groups who exercised two or three times weekly, while the other two groups did not change. The group that exercised once a week showed a significant decrease on the physical exhaustion subscale. Group A (exercise 3 x per week) Positive engagement z=2.39, p<.01; pre m=3.1, sd=0.6; post m=3.6, sd=0.3;Revitalisation z=2.75, p<.01; pre m=2.8' sd=0.4; post m=3.4, sd=0.3; Tranquillity z=2.84, p<.01; pre m=2.1, sd=0.8; post m=3.0 sd=0.8 Group B (exercise 2 x per week) Positive engagement z=2.83, p<.01; pre m=3.0, sd=0.6; post m=3.3, sd=0.6;Revitalisation z=2.54, p<.01; pre m=3.1, sd=0.7; post m=3.7, sd=0.3 Tranquillity z=2.21, p<.02; pre m=2.8, sd=0.7; post m=3.3, sd=0.3. **Adverse effects:** none	Selection bias - participants are a self selected group of volunteers Performance bias - those providing the intervention are aware of which group they are treating. Not clear how comparable the groups are at the beginning. Uncertain about the trustworthiness of the results. Did not report comparisons between groups No weaknesses presented by the authors. Strengths - results are consistent with other research. **Applicability:** Applicable only to populations or settings included in the studies - the success of broader application is uncertain. The intervention was undertaken in Greece is a specific setting with a self selected group of older people. It is unclear as to how generalisable the results are and the broader application is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
Matuska et al. (2003). Single group before and after design. - **Objective**: Do quality of life scores change after participating in the programme? **Recruitment:** Individuals living in their own homes in the surrounding areas were referred by a local Block Nurse Programme, while those living in the apartment complexes were recruited through flyers posted in their buildings. **Setting**: Community rooms in three different senior apartment complexes. **Country:** Minnesota, USA **Funding Source**: Sisters of St. Joseph of Carondelet, Minnesota Campus Compact and Presbyterian Homes Inc.	The intervention consisted of educational classes that focussed on teaching the importance of participation in meaningful occupations for better quality of life and strategies to remove personal and environmental barriers to participation. Weekly topics such as transportation, ageing, safety and falls prevention, lifestyle balance and communication were discussed. **Providers/Deliverers:** The classes were taught be at lest 2 occupational faculty and assisted by occupational therapy students. **Length**: 1.5 hours **Duration**: 6 months **Intensity:** n/a **Comparator:** no comparator **Population details** **Inclusion**: Self selection **Exclusion** none stated **Unit of allocation**: individual **Total** n = 65 **Intervention**: n = 65 **Comparator** n/a **Gender**: 95% female **Mean age (range):** Range from 70-92 (no mean reported). **SES:** Not reported	**Baseline comparability:** not applicable - no control group **Attrition** **Number of participants completing study** Complete data is available on 39 of the 65 participants. **Reasons for non-completion** N=9 did not return one of the forms, 1 refused to fill them out and 16 were incomplete. **Process details** **Data collection methods** Self report **Statistical methods** Paired t tests **Unit of analysis** Individual **Unit of allocation:** individual **Time to follow up**: 6 months **Mental well-being measure(s):** SF-36 mental health and mental component summary score. **Power calculation**: No calculation but the study is weaker than the authors implied.	There was an improvement (not significant) in the mental heath subscale from pre (m=72.31, sd=16.68) to post (m=74.67, sd=12.68) effect size = .23. The improvement in the mental health summary score significantly improved (t(38)=-2.24, p<.05) from pre m=49.39, sd=11.57 to post m=52.54, sd=8.88, effect size =.50. **Adverse effects:** none	Strengths-the pilot study provides additional support for prevention efforts for elders in urban and suburban communities. Weaknesses - Lack of control group, multiple t-tests, assessors not blinded to the intervention. No determination of which aspect of the programme may be more beneficial. **Applicability:** In considering the study limitations the generalisability of the intervention to populations or settings in the UK is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
McAuley et al. (2000) RCT+ **Objective:** To examine the effects of differential modes of physical activity (light to moderate intensity walking & stretching-toning) on several components of subjective well-being over 12 mths. **Recruitment:** Use a variety of strategies - included advertisements in the local newspapers, announcements and short "infomercials" on local radio shows known to have a large senior listening audience, and announcements on public service section of local television news programmes. Posted flyers advertising the trial in grocery stores, churches, senior centres, and other similar locations. **Setting:** Not specified for the aerobic component. Stretching and toning delivered in a gymnasium. **Country:** Not stated: researchers are based USA. **Funding Source:** National Institute on Ageing (Grant AG 12113).	To examine the effects of differential modes of physical activity (light to moderate intensity walking (aerobic) and a stetching/toning condition) on several components of subjective well-being. Specifically to contrast the effects of the two exercise programs on measure of SWB over a 12-month period. **Providers/Deliverers:** Trained exercise specialists. **Length:** Aerobic exercise group: 10-15 minutes per session, increasing by a minute per session until participants were exercising for 40 minutes per sessions. Conducted three times a week. Stretching and toning control group: 40 minutes with 10 minute warm-up and cool-down periods. **Duration:** 6 months. **Intensity:** Aerobic exercise began at light levels and gradually increased to more moderate levels. Levels of intensity were prescribed based on maximal responses during physiological testing and monitored via heart rate, and rating of perceived exertion. **Comparator:** Stretching and toning control group. **Population details** **Inclusion:** Aged 60 to 75 years, sedentary (as defined by a lack of regular involvement in exercise during the previous 6 months verified by exercise history and assessment of aerobic capacity by maximal graded exercise testing; health to the degree that participation in exercise testing and an exercise programme would not exacerbate any existing symptomology; personal physician's clearance for participation; adequate mental status as assessed by the Pfeiffer Mental Status Questionnaire and; willingness to be randomly assigned to a treatment condition. **Exclusion:** Not reported. **Unit of allocation:** Individual **Total:** n = 174. **Intervention:** n = 85 in Aerobic exercise group. **Comparator:** n = 89 in control group. **Gender:** 28% M; 72% F. **Mean age (range):** Mean 66.70 (S.D. 5.35), range 60-75. **SES:** None presented.	**Baseline comparability:** T-test comparing participants in the aerobic and stretching/toning group indicated that the two conditions did not differ significantly at baseline on any of the demographic, health status or psychosocial variables (all p>.10). **Attrition** **Number of participants completing study:** 153 completed the 6 month exercise programme (88%). Six months after completion of trial 116 returned for physiological assessment, and 152 complete psychological measures. **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Self-report **Statistical methods:** Testing latent growth curve. **Unit of analysis:** Individual **Time to follow up:** Immediately after the termination of the program and a further 6 months later **Mental well-being measure(s):** Memorial University of Newfoundland Scale of Happiness (MUNSH); Satisfaction with Life Scale (SWLS) of Deiner et al. **Power calculation:** None presented	No significant differences in means between the intervention and the control. Subsequently the authors combined the two conditions to represent one exercise intervention variable - physical activity. Latent growth curve associative model fit (estimating the growth in subjective well-being) were very good (x2 75.06, p = n.s.; CFI = 0.97; RMSEA = 0.037. These parameters demonstrated a significant increase in happiness and satisfaction with life at the end of the exercise intervention, followed by a significant decrease in these constructs at 12 months. Individuals who exercise more often during the programme also realized a greater increase in satisfaction with life over the 6-month program (b = 0.30, p<.05) and significantly smaller declines in satisfaction with life over the follow-up period (b = -0.24, p<.05). **Adverse effects:** None reported	MUNSH may be too global a measure of well-being to be influenced by physical activity frequency. The paper lacks details regarding the modelling analysis. The authors present the fit of the model, but the regression parameters are not presented. The sample was composed predominantly of females. However, the distribution by gender is more reflective of the population at this age than would be an equal ratio of males and females. The sample was predominantly Caucasian, little is known relative to physical activity effects on the psychosocial outcomes in minority older adults. **Applicability:** The findings are likely to be broadly applicable to similar populations in the UK..

Study Details	Intervention and population details	Analyses	Results	Comments
McLafferty et al. (2004). BA - **Objective:** What are the effects of an extended regimen of resistance training on measures of mood in a sample of healthy, older men and women. **Recruitment:** Recruited through newspaper advertisements, word of mouth and flyers in local community centres. **Setting:** Local fitness centre. **Country:** Not reported. **Funding Source:** Not reported.	The intervention was strength training. Participants warmed up on a bike or treadmill, then exercises were undertaken using gym equipment. Two conditions (high resistance and variable resistance) were examined. **Providers/Deliverers:** Exercise physiologists. **Length:** Not reported. **Duration:** 24 weeks. **Intensity:** High resistance was based on 80% of 1 repetition maximum for 8 to 10 repetitions. Variable resistance was based on 80, 50 or 65% of maximum for 8 to 10 repetitions. **Comparator:** No non-active control, the paper examines the two resistance conditions. **Population details** **Inclusion:** Age 60 plus, no CV, metabolic or physical disorders. Non-smokers, normal BMI. No previous participation in resistance training. Females – postmenopausal. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** n = 30. **Intervention:** not reported. **Comparator:** not reported. **Gender:** 54% M: 46% F **Mean age (range):** 60-77 (mean 66.9 +/- 4.3). **SES:** Not reported	**Baseline comparability:** N/A no control group. The analyses looks at differences in the POMS dimensions split by gender (this was not a hypothesis). These vary at baseline by gender. **Attrition** **Number of participants completing study:** n = 23 (77%). **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Interview post-intervention. **Statistical methods:** Repeated measures ANOVA. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Post intervention (24 weeks). **Mental well-being measure(s):** Profile of Mood States (POMS) - 65 adjectives measuring tension, depression, anger, vigor, fatigue, confusion and a derived total mood disturbance score. **Power calculation:** Not reported.	No significant differences were found for the POMS dimensions between high and variable resistance groups. Data were pooled and run as a 2 (pre vs. post) x 2 (male vs. female) ANOVA. Significant main effects (reductions) were found for the dimensions of tension, anger, confusion and total mood disturbance. There were differences between men and women for depression, anger, confusion, and total mood disturbance (this appears to largely reflect pre-test differences). **Adverse effects:** None reported.	The authors present the results of analyses that were not planned (gender is considered as a sub-group in addition to the planned analyses for intensity) yet these are not reported as post-hoc analyses. Weaknesses - Small sample size and power for detecting a training effect. Lack of control group engaged in parallel social, attentional, or interactional activity limits experimental conclusions. The participants in this study may be more motivated to exercise than the general population. **Applicability:** The findings of this study should not be generalised to the UK

Study Details	Intervention and population details	Analyses	Results	Comments
Milligan, Gatrell & Bingley (2004). Qualitative - **Objective:** To investigate the potential benefits of gardening activity for older people, and in particular, to examine the extent to which communal gardening activity on allotment sites may be beneficial to the health and mental well-being of older people. **Recruitment:** Participants recruited through GP lists and approached for consent. **Setting:** Community based intervention for older adults on an allotment site provided by Carlisle City Council. **Country:** Carlisle, England. **Funding Source:** Carlisle City Council provided the allotment sites. A qualified gardener paid for through project money. No information about funder.	Participants took part in a shared (group) gardening scheme. Two allotment sites (450 metre squared) were provided free by the local council. Participants were supported by a full time qualified gardener. All equipment, seeds and plants were provided by the project and the participants decided what they would like to grow. Participants could choose whether to garden communally with others on the site, or have a smaller section of their own. **Providers/Deliverers:** Carlisle City Council provided the sites; the Research team provided the gardener who then had contact with the participants other than when the research undertook interviews. **Length:** unlimited. **Duration:** 9 months. **Intensity:** unlimited. **Comparator:** no comparators. **Population details** **Inclusion:** aged over 65, not mentally confused and had some physical mobility (i.e. were able to walk at least 100 yards without support). **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** 30 participants initially recruited, data gathered from 19. **Intervention:** n = 30. **Comparator:** No comparator. **Gender:** 13 male and 6 female at the end of the project. **Mean age (range):** Age range 65-79 median = 70 yrs. **SES:** Not reported.	**Baseline comparability:** N/A. **Attrition** **Number of participants completing study:** 16/30 completed. Data of 19 are used as 3 who dropped out at the end took part in the majority of the scheme. **Reasons for non-completion:** 10 withdrew in first few weeks because of either their own ill-health or their partners. 1 withdrew due to personality differences between themselves and other participants. 19 undertook the gardening schemes. After 3 months a further 3 dropped out due to ill health, spousal ill health, and personality differences. **Process details** **Data collection methods:** Mixed methodology - a focus group prior to beginning the project, semi-structured interviews, self assessment through standard weekly diaries (structured questions) and observational data gathered by the researcher and gardener. **Statistical methods:** Data transcribed in full and analysed using a grounded theory approach with ATLAS/ti qualitative software. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Post intervention. **Mental well-being measure(s):** No outcome measures other than that grounded in the data. Used the concept of the therapeutic landscape. **Power calculation:** Not required	Being in and part of a country side or garden environment in an urban area of Northern England was found to be therapeutic in that people felt more peaceful, at ease and tranquil. Allotments as sites for communal gardening were seen to contribute to the social inclusion of older people in that they offered a means of combating social isolation and promoting the development of social networks. Also, gardening was found to help the participants gain a sense of achievement, satisfaction and aesthetic pleasure from the engagement with nature. Participants acknowledged that despite keen interest, declining physical fitness was a worry, rendering them unable to undertake the heavier aspects. The authors suggest that communal gardening may provide one solution to maintaining the mental, physical and social experience of gardens and gardening activity. It also helped inclusion through the group providing support and care to other members. **Adverse effects:** None reported.	Did not follow-up those people who dropped out, consequently the results have an element of bias. **Applicability:** Relevant study, conducted recently in the North of England. Highlights the importance attached to gardening that is held by many people, and the potential benefits.

Study Details	Intervention and population details	Analyses	Results	Comments
Moore & Bracegirdle (1994). Quasi RCT - **Objective**: Experimental hypothesis: A 6-week exercise programme will produce significant improvement in the self-reported wellbeing and happiness of elderly community-dwelling women **Recruitment:** Volunteers from elderly women who attended a day centre **Setting**: Day centre **Country:** Blackpool, UK **Funding Source**: Not specified.	Low intensity weekly exercise group exercising to music whilst seated together with an exercise sheet to take home for extra training. **Providers/Deliverers:** Exercise training by an occupational therapy student, and self-completion of home exercise programme **Length**: Not specified **Duration**: 6 weeks **Intensity:** Low-intensity **Comparator:** Control group continued to participate in their usual activities at the day centre. These included card games, dominoes and bingo. **Population details** **Inclusion**: Women, who attended a day centre in Blackpool, who could walk without assistance, and were free from illness, disability and emotional disorder **Exclusion:** Not specified **Unit of allocation**: Individual **Total:** n = 35. Originally 15 in experimental group and 20 in control group. After drop-out, experimental group of 12, control group of 15 **Intervention**: n = 15. **Comparator:** n = 20 **Gender**: 100% female **Mean age (range):** M= 79.7 (range 69-93). **SES:** Not reported	**Baseline comparability:** Yes, for MUNSH scale, no difference in mean score for experimental group and control group (m = 1.9) **Attrition** **Number of participants completing study:** Experimental group n = 12, 80%; control group n = 15, 75%. **Reasons for non-completion:** Minor illness or holiday **Process details** **Data collection methods:** Interview **Statistical methods:** T-tests **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** 12 weeks (at the end of the study) **Mental well-being measure(s):** Memorial University of Newfoundland Scale of Happiness (MUNSH) **Power calculation**: None presented.	No significant differences in pre- and post-test scores for the control group. T-tests indicated significant differences in pre- and post-test scores for experimental group ($t=-10.5$, $p<.05$). No between group differences are reported. **Adverse effects:** None reported	The small sample size suggests that the results are not powerful enough to detect any effects. The lack of concealment of the intervention: the author notes that it is quite likely that both groups of women guessed that his was an investigation into the relationship between happiness and exercise, high likelihood of performance bias. Lack of control over the home exercise programme also meant that the outcomes may have been affected by for example, women completing the exercises together (at each others home). **Applicability:** The intervention was conducted in the UK with women in a day centre and is likely to be applicable to older mobile women across a similar range of settings.

Study Details	Intervention and population details	Analyses	Results	Comments
Mountain, G., Craig, C., Mozley, C & Ball, B. (2006) Q+ **Objective**: To examine the feasibility and acceptibility of 'Lifestyle Matters'. **Recruitment:** Active community engagement - advertisements were placed in surgeries, supermarkets, library, post offices, newspaper. Talks were given offering taster sessions. District nurses and GP's were encouraged to refer and voluntary organisations notified. **Setting**: One group in church hall, another in a room at the back of the church. **Country:** England (Sheffield) **Funding Source**: Sheffield Health and Social Care Research Consortium	The intervention is the adapted UK version of that undertaken by Clark et al., (1997; 2001). 'Lifestyle Matters' incorporates group activity sessions to promote positive changes in lifestyle. Topics includ health behaviours, transportation, personal safety, social relationships, cultural awareness and finances. The intervention was expected to improve specific health practices and increase the general sense of purpose and meaning via engaging in meaningful activity. **Providers/Deliverers:** Occupational therapists and assistants **Length**: a) 2 hours (group) b) 1 hour (individual) **Duration**: a) 8 months b) 8 months **Intensity:** a) 1 x weekly b) 1 x monthly **Comparator:** N/A. **Population details** **Inclusion**: Living in the community; **Exclusion:** MMSE </=18 **Unit of allocation**: Individual **Total:** N = 28 **Intervention**: n = 28 **Comparator:** n/a. **Gender**: 3 males and 25 females. **Mean age (range):** 61-92 (mean = 78.5) **SES:** Not reported	**Baseline comparability:** N/A (only 1 group) **Attrition** N=2 **Number of participants completing study:** 26 **Reasons for non-completion:** Ill-health **Process details** **Data collection methods:** Qualitative interviews and quantitative self completion **Statistical methods:** Paired sample t-test, thematic analysis **Unit of analysis:** Individual **Time to follow up**: 8 months after baseline **Mental well-being measure(s):** MMSE; GDS; Barthel ADL; Nottingham Leisure Questionnaire; WHODAS; SF-36 **Power calculation**: None reported	Although the study incorporated a number of quantitative measures, the sample size is too small. However the application of the measures yielded useful qualitative insights, as a number were not particularly appropriate. The MMSE is useful for screening only. The Barthel Index was unsuitable as it was developed to determine dependency. The GDS is useful for detecting depression, but is not sensitive to the level of sub-clinical depression present in some of the participants. The qualitative analysis indicates that the participants reported the acquisition of new skills, improvements in their mental well-being and physical health. They indicate the social benefits of the programme and increases in confidence. A number participants report engaging in further activities at the end of the intervention period. It would appear that therapy assistants can deliver the intervention providing they are supervised by and in regular contact with occupational therapists. **Adverse effects:** None reported	The research does not make any attempts to provide anonymity to participants. Names are cited in full. This paper provides valuable insight into the acceptability and feasibility of applying to older people in the UK the USA well elderly study (Clark et al., 1997; 2001) **Applicability:** The results of this pilot study indicate the potential broader applicability of this intervention in the UK context.

Study Details	Intervention and population details	Analyses	Results	Comments
Munro et al. (2004). Cost utility analysis alongside cluster RCT (Quality rating **+**) **Objective:** To evaluate medium-term cost-effectiveness of twice-weekly exercise classes. **Recruitment: By 12 general practices who wrote to all registered older people**. **Setting**: Community or church halls & occasionally residential homes. **Country:** UK. **Funding**: Cardiovascular Disease & Stroke Programme of NHS Executive; Department of Health for Medical Care Research Unit (host).	Intervention practices: Invitation to attend local, free exercise classes. Exercises, typically performed to music, were aimed at improving balance, flexibility, mobility & strength (through resistance bands). Programme included warm ups, aerobic activity (cardio respiratory fitness). cooling down period, social time & other activities e.g. bowling, swimming, dancing and walking. **Control practices:** No invitation to participate. **Providers: Qualified exercise leaders** **Length of session:** 75 minutes, of which 45 minutes was physical activity. **Intensity: Twice w**eekly **Length of intervention:** 9 months Study population: All 9897 older people in 12 practices, of whom 8117 (82%) responded. Target population: Least active 80% responders (n=6420), of whom 2,283 in 4 practices were invited to exercise programme (of whom 590 – 26% – attended >=1 session) & 4137 were controls. Measures: SF36, Physical Activity Questionnaire (PAQ) for older people, & health service resource use questionnaire via post at 3 points – baseline, and 1 & 2 years after intervention began.	**Source of effectiveness data:** SF-36 data from cluster RCT were converted into health state utilities using recently estimated preference based algorithm. **Costs included:** **Programme costs:** actual cost of recruitment, hire of halls, payments to exercise leaders & refreshments, less research costs of trial. **Health service costs:** from study practices, local health authority for A&E outpatient & inpatient attendances, & NHS Central Register. **Perspective**: NHS **Currency**: Euros (€). **Cost year**: 2003-4 using Hospital & Community Health Services pay & price index and GDP inflator. **Time horizon:** 2 yrs **Discount rate = Nil**	**Effectiveness / patient / alternative:** Attendance more likely among women (29%) than men (20%, p<0.001), < 75 years (29%) than > 75 years (23%, p<0.001) and more active than less active people (37% of those with PAQ score > 5 versus 23% of those with PAQ score < 5. Of 590 ever participating in programme, 50% attended at least 28 sessions & 30% attended at least 60 sessions during 2 years of intervention period. SF-36 mental health domain results: adjusted mean difference = 2.65 (95%CI from -0.13 to +5.42; p=0.06) but 10.2 ever exercisers. **Cost / patient / alternative:** **Programme costs**: €267,033 comprising baseline activity survey = €10,725, facilitators (0.5 WTE for 2 yrs) = € 113,928, set-up coordinators (0.3 WTE) = € 8165, continuing coordinators = €21,733, office accommodation = €19,637, hire of halls = €32,645, exercise leaders (1337 sessions) = €41,769 travel = €3,824 refreshments = €14,566. Costs annuitised over a 5 year period. Mean costs = €128,302/year, €125.78/session, €9.06/attender. **Health service costs**: no evidence of fewer people admitted to hospital for exercise-related cause in intervention compared with control; more of the intervention group admitted for any cause (37.4% of 853 v. 35.6% of 1473). As no significant difference in health service use, costs were not reported. **Incremental cost-effectiveness:** QALY estimated for 3149 people who completed the SF-36 at all 3 assessments (1052 intervention & 2097 controls). The average net QALY gain of 0.011 / person in the intervention population resulted in incremental cost / QALY of €17,172 *(£12,103)* [95% CI = €8,300 *(£5850)* to €87,115 *(£61,399)*] Sensitivity analyses: Halving # sessions & employing practice nurses rather than technicians. Varying session fees of exercise leaders by +/- €4.46. Varying # attenders between 8 & 20 per session. Using 3 different approaches to calculate QALY estimates: (a) total programme costs / QALY gain for survey completers (b). programme cost for survey completers only / QALY gain (n = 1052) (c) programme cost / QALY gain assuming all participants in the intervention arm experience the average gain (n=2283); the cost / QALY varied between €4,739 (c) & €32,533 (a).	Weaknesses: Low levels of adherence to exercise programme. No details of non-responders or losses to follow-up, or practices, socio-economic areas or rurality (important in cluster RCT). Differences in attendance in text but not tabulated. Health service costs not reported because no significant differences!

Study Details	Review Parameters	Results	Comments
Netz et al. (2005). Meta-Analysis + **Objective**: To examine the effects of organised physical activity on the well-being of older adults without clinical disorders. **Databases searched:** MedLine, PsycINFO and SPORTdiscus. The authors also searched journals in gerontology, psychology and exercise science. **Years:** All studies published before 2004 **Funding source**: not reported	**Inclusion**: Mean age of 54 or older. English language published before 2004 **Exclusion:** Correlational studies. Studies that did not provide sufficient information for computing effect sizes (ES – mean change in score from before to after, divided by population sd before). **Numbers included:** 36 studies comprising 81 samples [22 coded as late middle age (54-64 years), 50 as young old (65-74 years) and 9 as old old (>74 years)] & yielding 406 effect sizes.. Mean age of participants = 66.4, sd=7.5, range 40-101 **Data Extraction:** Studies & samples were coded for all variables potentially moderating the exercise–psychological well-being relationship: (a) study design (b) participants (c) physical-fitness of participants (d) exercise activity & (e) psychological well-being – measure & score. These were independently coded by two coders. Coding reliabilities, computed as %age of agreement on coded variables before conslidation, ranged from 86% for ES to 100% for gender, exercise type, and duration & frequency of exercise. **Synthesis: The authors used a classical meta-analyis, ie similar to a multiple regression analysis with effect sizes rather than participants as observations. Where the data are homogeneous across studies, MA uses a** fixed effects model; where somewhat heterogeneous, it uses a random effects models. Though the latter was needed, fit was acceptable & a funnel plot showed little evidence of publication bias.	Aerobic exercise improved psychological well-being the most (ES = 0.29, se = 0.031), followed closely by resistive exercise (ES = 0.23, se =0.045). The effects of these two exercise types did not differ significantly. Resistive exercise combined with aerobic exercise showed the smallest mean change (ES = 0.0, se=0.037) although the authors note that nearly half of these studies measured life satisfaction rather than some more specific outcome. In the control groups the mean for participants who had light callisthenics was similar to the mean for those with no exercise, and both control groups showed mean changes significantly greater than zero. In terms of intensity, moderate exercise benefited older adults psychological well-being the most (ES =0.34, se=0.041) whereas light intensity benefited the least (dc=0.14, se=0.018). The authors also investigated whether changes in well-being related to the different aspects of psychological well-being measured. There were significant differences between treatment and control group means for 4 measures: anxiety (z=2.88, p<.02), overall well-being (z=2.38, p<.01), self-efficacy (z=2.69, p<.01) and view of self (z=3.59, p<.01). Exercise had the largest impact on physical symptoms and the least impact on life satisfaction. Weighted multiple regression analysis of exercise dose found that longer (i.e. weeks of exercise) exercise programmes showed either less positive change or actual reductions in psychological well-being. The impact of duration in weeks was inconsistent across each measurement. For anxiety, depression and self efficacy decreases in well-being were found for longer (number of weeks) interventions. Inconsistent relations were also found for number of sessions per week, which was significant and positive for anxiety and self efficacy. Longer exercise sessions reduced anxiety. by greater margins. When looking at treatment effect by age those aged 54-64 years had the largest mean change (Effect size . = 0.33) and the oldest sample (>74) had the smallest mean (Effect size = = 0.11). **Adverse effects:** Longer interventions reduced well-being.	The outcome measures vary. Some would not be considered psychological well-being by our criteria as they refer to mental ill-health. Weaknesses: The magnitudes of the effect sizes are small. This may be due to the non-clinical nature of the population, as many of these measures are more sensitive with clinical populations. Older people without clinical disorders may not suffer from low PWB to the extent that activity might significantly increase it. The studies included in the analysis did not permit estimation of the effects required for the minimum time, intensity and mode of exercise required to achieve meaningful psychological effect. Strengths: The meta-analysis supports the perception that well-being is a multi-faceted phenomenon. The results support other research. The authors suggests that further research needs to target the environmental thresholds (i.e. exercise mode, duration and intensity) and age category, which signify the beginning of psychological gains and possibly psychological declines associated with various types of physical activities. **Applicability:** This is a meta-analysis of international research and its findings are likely to be applicable to the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Noice, Noice & Staines, (2004). Controlled non-randomised trial - **Objective:** To determine whether a month of unique mental/ physical/ emotional activity raise various measures of cognitive/ affective health, and whether such benefits are specific to theatre training or could they be achieved by any stimulating program of equal length performed in an enjoyable, sociable setting? **Recruitment:** Talks were given in senior centres and notices placed in senior newsletters. **Setting:** Two local hospital wellness centre's classrooms **Country:** DuPage county, Illinois, USA. **Funding Source:** Grant from the National Institute on Aging.	The intervention is arts based with two conditions. 1) A theatre course designed to give the participants the experience of acting and become so engrossed in the drama that situation specific cognitive/affective/physiological alterations occur in their demeanour. 2) A visual arts course involving activities such as speculating on the intention of the artist from an examination of the work or giving an interpretation of some highly ambiguous image. **Providers/Deliverers:** Art course teacher **Length:** 90 minutes per session **Duration:** 1 month **Intensity:** n/a **Comparator:** The no treatment control group were tested on the same time frame (i.e. pre and post the intervention period). They received exactly the same information as the other participants, except that they were told that the study involved taking two tests, 4 weeks apart before training commenced. No information provided as to who did the testing. **Population details** **Inclusion:** Not reported **Exclusion:** Not reported **Unit of allocation:** Individual **Total:** N = 124 at baseline. **Intervention:** n = 44 theatre arts training **Comparator:** n = 44 visual arts training ; n = 36 control. **Gender:** Theatre 79.5%F: 20.5 M; visual arts 77.8% F: 22.2%M; C 77.1% F: 22.9M **Mean age (range):** 60-86 (M=73.7, sd=5.99) **SES:** Not reported.	**Baseline comparability:** For age there were no significant differences between theatre and control groups. The visual group was slightly younger than the control group. The three groups were similar on education, marital status and gender. **Attrition** **Number of participants completing study:** 111 of 142 (78%) **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Self-report questionnaires **Statistical methods:** MANCOVA **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** Post-intervention (1 month post baseline). **Mental well-being measure(s):** Perception of psychological well being was measured using the 3 of the scales developed by Ryff (1989) - personal growth, self acceptance and positive relations with others. Self-esteem scale (Rosenberg) - 10 item questionnaire. **Power calculation:** Not reported	At the univariate level, significant differences were obtained for psychological well-being, $F(2,101) = 7.51$, $p = .001$, partial eta 2 = 13, but not for self-esteem ($F < 1.0$). Post hoc comparisons find that the theatre group experienced significantly greater psychological well-being after the intervention, compared with no-treatment controls ($p = .002$) and also compared with the visual arts group ($p = .003$). No significant differences were observed between conditions for self-esteem Psychological well-being and self esteem did not decline for the theatre group during the 4 month follow up period. **Adverse effects:** None reported.	The method of randomisation of participants - there were constraints around the allocation of subsequent waves of recruited participants. However the authors state that there was no self selection to condition, and the participants were unaware of the subject of the course until their first day. Possibility of non-targeted training producing increased efficiency for a number of every-day tasks that depend on cognitive ability **Applicability:** The intervention is conducted in the USA and by the nature of the recruitment process selected only those individuals who are motivated and would be drawn to participating in a theatre group. The applicability of the interventions to populations in the UK is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
Oken et al., (2006). Randomised controlled trial + **Objective:** To determine the effect of yoga on cognitive function, fatigue, mood and QOL in seniors. **Recruitment:** Through notices in the local newspaper, community sites and the Oregon Health Science University website.. **Setting:** In the community with practice at home **Country:** Portland, Oregon, USA. **Funding Source:** National Institute of Health Aging.	Lyengar yoga. An average of 7-8 poses per week were taught for 6 months. Each pose was held for approximately 20-30 seconds with rest periods between poses lasting 30 seconds to 1 minute. Repetition was consistent from week to week and linked pose to pose. Each class ended with a 10-minute deep relaxation period with the subject lying supine. Progressive relaxation, visualisation, and meditation techniques were introduced during this time. Daily home practice was strongly encouraged. Subjects were given a booklet illustrating the specific poses to help with their independent practice. **Providers/Deliverers:** Trained yoga teacher **Length:** 90 minutes per session **Duration:** 6 months **Intensity:** n/a **Comparator:** Exercise class and wait list controls. The exercise classes involved a 1 hour session each week for 6 months, walking or running around an outdoor 400 metre track at 70% of maximal predicted heart rate. Subjects were also encouraged to exercise daily at least 5 times per week in addition to the group session. Waiting list controls were told they could sign up for either yoga or exercise class free of charge after the 6 months. **Population details** **Inclusion:** Not reported **Exclusion:** Insulin dependent diabetes; uncontrolled hypertension; evidence of liver or kidney failure; significant lung disease; alcoholism or other drug abuse; symptoms or signs of congestive heart failure; symptomatic ischemic heart disease; significant visual impairment; Actively practicing yoga; or taken a yoga or tai chi class in the last 6 months; regularly perforimng aerobic exercise more than 210 minutes per week. **Unit of allocation:** Individual **Total:** N = 135. **Intervention:** n = 44 **Comparator:** n = 47 in exercise, n=44 wait list. **Gender:** 104 female, 34 males. **Mean age (range):** 65-85 **SES:** N/A	**Baseline comparability:** Means and standard deviations are presented for gender, race, age, years of education, WRAT-3, and BMI. They appear similar but the similarity or significance of differences is not reported. **Attrition** **Number of participants completing study:** 118 **Reasons for non-completion:** The most comon reasons for dropping out were dissatisfaction with the assignment to waiting-list, family health issues, and time constraints **Process details** **Data collection methods:** Self-report questionnaires and assessed performance **Statistical methods:** ANCOVA **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** At completion of the intervention (6 months). **Mental well-being measure(s):** SF-36; POMS **Power calculation:** The targeted enrolment was 150 subjects with an estimated power of 0.8 using ANCOVA for the Stroop test, assuming a moderate effect size (f - .25), baseline-6-month visit correlations of 0.5, and a 20% attrition rate	There were effects on a number of the SF-36 dimensions in favour of the yoga. Vitality/energy and fatigue (P = .006), role-physical (P = .001); bodily pain (P = .006); social functioning (P= .015) and physical composite scale (P = .005). There were no significant effects on mood as assessed with POMS. **Adverse effects:** None reported.	Healthy seniors such as those in this study may be functioning near their best and may not be able to demonstrate significant improvement during a 6 month study. This may contrast with seniors who are not at their best. The effects of the yoga programme may be influenced by socialisation, placebo and self-efficacy effects. The power of the study is limited. Participants were highly motivated volunteers. **Applicability:** The intervention is conducted in the USA and by the nature of the recruitment process selected only those individuals who are motivated and healthy. It is likely to be applicable to similar populations and settings in the UK. .

Study Details	Intervention and population details	Analyses	Results	Comments
Paw et al. (2002). RCT – **Objective**: To examine the effects of a 17 week comprehensive progressive exercise programme, consumption of enriched foods, or both combined, on the psychological well-being of frail older people. **Recruitment:** The participants were recruited by personal letter (>7000) sent from senior housing facilities, meals on wheels, home care organisations and general practitioners, flyers posted in senior housing facilities, and advertising in regional facility newsletters. Particpants were assigned to one of four conditions a) supervised group exercise b)enriched food products c) both a and b d)neither – control group. **Setting**: unclear **Country:** The Netherlands **Funding Source**: Not reported **Gender**: 30% were male **Mean age (range):** Mean age =78.5 (sd=5.7) **SES:** None reported	The exercise intervention consists of two aspects. 1) a strength, speed, endurance, flexibility and coordination training. To enhance enjoyment and accessibility, game like activities were included and exercises were adjustable to individual ability. The exercise group received identical but non-enriched foods as the nutritional group. 2) A nutritional intervention consisting of two enriched products per day - participants were instructed to eat daily one fruit product, available in two types of juice and compote, and one dairy product, available in vanilla custard, soft fruit curd cheese and two types of fruit yoghurt. Those not randomised to exercise participated in a social programme (lectures, games, crafts) once every two weeks to control for the effects of socialisation and attention. **Providers/Deliverers:** Unclear - does not state who is supervising the exercise sessions. For the socialising group a creative therapist was used. **Length**: Exercise - 45 minutes, socialising 90 minutes, nutrition - 2 supplements per day **Duration**: 17 weeks **Intensity:** Exercise twice a week, socialising = once every two weeks. Nutrition once every two weeks. **Comparator:** Comparisons were made between the exercise group the enriched foods group and no treatment control group. The analysis created four groups to assess any change. Group 1 - exercise group and the combined exercise and nutrition group; group 2 - no exercise group and control; group 3 - nutrition group and the combined nutrition and exercise; group 4 - exercise and controls. **Population details** **Inclusion**: Age 70 or over, use of care services, not participating regularly in physical activity of moderate to high intensity, self reported BMI of <25kg/m2 or involuntary weight loss, non-institutionalised, no terminal disease or rapidly deteriorating health status, not taking multi-vitamins for the preceding month, the ability to understand study procedures. **Exclusion** none reported **Unit of allocation**: group **Total** n = 217 **Intervention**: Group exercise n=55; food group n=58; food and exercise group n=60 **Comparator** control n=44	**Baseline comparability:** The authors report that there are no signficant differences at baseline between the intervention and control groups, except for age; the exercise group were younger (m=76.1) than the controls (m=78.7). **Attrition** **Number of participants completing study** 161 completed. 16% dropped out of the control group. 26-29% dropped out of the intervention groups. **Reasons for non-completion** Health problems, too much distress, programme too long or at an inconvenient time. **Process details** **Data collection methods** Self-report **Statistical methods** Student's t test and Wilcoxon rank sum test. **Unit of analysis** Individual **Unit of allocation:** group **Time to follow up**: 17 weeks to end of intervention, follow-up period not stated. **Mental well-being measure(s):** The Dutch Scale of Subjective Well-being for Older Persons **Power calculation**: The authors state that on the basis of an expected difference between the changes in the intervention groups of 10% with 1-b=0.80 and a=0.05%, a sample size of 26 subjects in each group was needed	The results were not significant. Group 1 (exercise group and the combined exercise and nutrition group) n=67 mean change = 0.0, sd=2.0, ns. Group 2 (no exercise group and control)n=72 mean change=-0.1 sd=1.9, ns. Group 3 (nutrition group and the combined nutrition and exercise) n=70 mean change=0.1sd=2.0 ns. Group 4 (exercise and controls) n=69 mean change=0.0 sd=1.9, ns. **Adverse effects:** none	Group assignment by sealed envelopes. Couples randomised together. More subjects assigned to intervention groups as the authors expected higher drop outs there. Assessors were blinded. Relatively high levels of attrition. The authors suggest that one explanation for lack of effects may be that the outcome measure is not sensitive to change, as their anecdotal feedback suggests that the participants enjoyed the interventions. They suggest that the SWB measure may not be suitable to measure effects in intervention studies. **Applicability:** Both of the interventions (nutrition and exercise) are regarded as important for healthy ageing in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Perrig-Chiello et al. (1998). Controlled non-randomised trial – **Objective:** What are the short- and long-term effects of resistance training on muscle strength, psychological well being, control-beliefs, cognitive speed and memory in normally active elderly people? **Recruitment:** Not specified, but drawn from the sample of people involved in the Interdisciplinary Ageing (IDA) study. **Setting:** Not specified. **Country:** Not specified, however researchers are located in Switzerland. **Funding Source:** Not specified.	The intervention is resistance exercise consisting of: 10 minute warm up, eight resistance exercises on machines (leg press, bench press, leg curls, seated row, leg extension, preacher curls, trunk curls and back extension). **Providers/Deliverers:** Not specified. **Length:** 10 minute warm-up. Length of intervention not specified. **Duration:** 8 weeks. **Intensity:** Not specified. **Comparator:** Not specified, although the terminology used in the long-term follow up study suggests that they were on a waiting list for the intervention. **Population details** **Inclusion:** Included in the Interdisciplinary Ageing study and expressing an interest in planned resistance training. **Exclusion:** Not specified. **Unit of allocation:** Individual. **Total:** Short term study: 46 - 23 in intervention group; 23 in control group. Long term study: 52 - 33 in intervention group; 19 in control group. The intervention group included 10 more people from the original control group, and the control group included 6 new people. These were compared to the rest of the longitudinal sample (N=268). **Intervention:** See above. **Comparator:** See above. **Gender:** 61% Male; 39% Female in short-term study. No details of long term study. **Mean age (range):** Long-term study age range 65-95 years. Short-term study mean age 73.2 years. **SES:** Not reported.	**Baseline comparability:** Yes. **Attrition** **Number of participants completing study:** 23 in short term study, 33 in long term study. **Reasons for non-completion:** Not applicable. **Process details** **Data collection methods:** Not reported. **Statistical methods:** t-tests for short term study. F-tests for long-term study. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** 1 week and 1 year. **Mental well-being measure(s):** Psychological well being - three subscales from a personality questionnaire (the reference suggests this is a Swiss specific measure): Meaning of life, self-attentiveness/self-preoccupation (having self-centred thoughts and being anxious and concerned about themselves and their future) and complaintlessness. Control beliefs - four scales of a questionnaire on competence and control beliefs (reference suggests this is a Swiss specific measure): self-efficacy beliefs, internal control, social-external control and fatalistic-external control. **Power calculation:** Not presented.	Short-term effects: No significant pre/post-test changes between groups were found for the 4 well-being items. Significant increases in self-forgetfulness (lack of self attentiveness/self preoccupation) [t (22) =2.83, p<.001] were found in the training group (pre m=17.6 sd=28; post m=16.6, sd=2.3) but not the control group (pre m=16.7, sd=2.8; post m=17.0, sd=3.1). There were no changes on the measures of control beliefs. Long term effects: No significant changes could be registered for psychological well-being or control beliefs (although physical measures improved). **Adverse effects:** None reported.	The study is not rigorous enough for the results to be conclusive. Selection bias. The authors suggest that the intervention programme may have been too short to find measurable change in the well-being and personality measures. **Applicability:** The paper lacks considerable details about the intervention and the applicability to the UK is uncertain.

Study Details	Intervention and population details	Analyses	Results	Comments
Pinquart & Sörensen, (2001) Meta-analysis + **Objective**: 1. To evaluate the effectiveness of several forms of psychosocial treatments for older adults (relaxation, supportive interventions, control enhancement, psycho-educational treatments, activity treatments, and training of cognitive abilities in older adults) on subjective well being (e.g. life satisfaction, morale, self-esteem). 2. Comparison of group intervention with individual interventions, and interventions with community-dwelling older adults versus nursing - home residents. In addition, investigation of the effect of the number of session, of the timing of effect measurement, and of the quality of the intervention on the effect size. 3. Whether the effects of psychosocial intervention vary by age. **Recruitment:** All experimental studies in which a psychosocial or psychotherapeutic intervention group was compared with untreated control group, excepti case-control studies. **Funding Source**: Not reported	Included studies Studies which invoved psychosocial treatments for older adults (relaxation, supportive interventions, control enhancement, psycho-educational treatments, activity treatments, and training of cognitive abilities in older adults). **Population details for included studies** **Inclusion**: Studies were included if: (1) the participants had a mean or median age of =>55 years, (2) and experimental (psychosocial or psychotherapeutic intervention) group was compared to an untreated control group, (e) effects were reported with regard to (self- or clinical-rated) psychological well-being (e.g. life-satisfaction, morale, self-esteem, happiness, loneliness), (4) Statistics could be converted into effect sizes. **Exclusion** Studies that only reported effects of a combination of psychotherapy and pharmacotherapy were not included. Case studies were excluded as were two treatment groups with no controls. **Total** 84 studies reporting self-rated SWB. with 3718 participants.d	**Baseline comparability:** Test indicated significant homogeneity across studies with outcome measure of subjective well-being. **Attrition** **Number of participants completing study** n/a **Reasons for non-completion** n/a **Process details** **Data collection methods** Data bases searched: PSYCHINFO; MEDLINE PSYNDEX within dates 1970-1999. **Statistical methods** 1. Effect sizes were computed for each study as differences in the post-treatment measure between the experimental and the control group divided by the pooled standard deviation of both groups. Effect sizes were derived from t values, F values, exact p values and a values. Effect size estimates were adjusted for biases due to difference in pre-tests between experimental and control group and due to overestimation of the population effects size. Confidence intervals that include 95% of the effects were computed for each effect size. 2. Weighted mean effect sizes were computed. If more than one effect size was provided for an intervention with regard to one group of outcome measures we divided the sample size by the number of measures to avoid disproportionate weighting of studies with more than one outcome measure. 3. The significance of the mean effect size was tested by dividing the mean effect size by the estimation of the standard deviation. 4. The homogeneity of effect sizes was computed by use of the homogeneity statistics Q which is distributed approximately as x2 with k-1 degrees of freedom, where k is the number of effect sizes. 5. For sub-samples based on the content and conditions of intervention separate analyses were calculated. 6. Difference of effect sizes between conditions was tested. Difference between two conditions was interpreted as significant when the 95% intervals did not overlap. **Mental well-being measure(s):** Subjective well being measures (life satisfaction, morale, self-esteem, affect).	Non-therapeutic interventions (Mean effect size g= .39, t=12.00, p<.001), relaxation (g=.72, t=7.1, p<.001), supportive treatment (g=.37, t=7.6, p<.001), miscellaneous therapy (g=.39, t=4.64, p<.001), control-enhancing interventions (g=1.03, t=10.78, p<.001), psycho-educational interventions (g=.37, t=5.52, p<.001) and cognitive training (g=.16, t=2.29, p<.05) all increased subjective well-being. Activity promotion (g=.16, t=1.87, p<.1) did not have a significant effect on SWB. Control-enhancing interventions showed above average efficacy. Intervention using individual condition (g=.46, t=9.55, p<.001) produced larger changes than interventions in groups (g=.21, t=7.3, p<.001). Psychosocial interventions with community-dwelling older adults were associated with smaller changes in SWB (g=.15, t=5.55, p<.001), than interventions in nursing homes (g=.60, t=11.44, p<.001). Analysis of immediate and delayed post-test follow up of intervention showed that improvements in SWB remained stable over time with significant results at both follow up times (Immediate post-test g=.34, t=10.35, p<.001; delayed post-test g=.18, t=5.25, p<.001). Professional qualifications of the therapist had an influence on the effect size: for psychosocial interventions the greatest improvement in SWB was found when the therapist/researcher had both advanced degrees and professional experience or special training in working with older adults (g=.33, t=5.15, p<.001), than when therapists/researchers had advanced degrees but no gerontological or geriatric experience (g=.08, t=1.13, p, n.s.), or did not have advanced degrees (g=.77, t=5.59, p<.001) (significance of difference, condition 1, 2, < 3). The quality of the research was also related to the effectiveness of the intervention. Papers that provided little information on the psychosocial intervention or had methodological problems (low quality) (g=.66, t=3.9 p<.001) were less likely to show improvement in SWB than papers of medium quality (g=.61, t=10.7, p<.001) and less improvements in other self-rating measures of SWB than high-quality research reports (g=.66, t=3.9, p<.001) (significance of differences, 1 < 2,3). Looking at age effects: there was no significant relationship between age and change in SWB (55-67.9 years: g=.43, t=10.75, p<.001; 68-76.2 years: g=.38, t=8.47, p<.001; >76.2 years: g=.43, t=10.55, p<.001). **Adverse effects:** none	Some meta-analysis has been criticised because it may over-estimate effects due to the lower probability of non-significant studies being published. However, many of the interventions produced large effects so that the addition of some non-significant studies would not have been sufficient to eliminate the significant effect found. Unexplained heterogeneity of effect sizes in many analyses was found. However, this heterogeneity was reduced by identifying moderator effects. **Applicability:** The location of the studies is not discussed however the meta analysis draws on the international literature and is likely to be applicable to similar populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Powers & Wisocki (1997). Before and after - **Objective:** To determine if elderly participants in a focus group discussion - designed to promote an in-depth exploration of worry and anxiety - reported long-term therapeutic benefits in their experience of worry. **Recruitment:** Participants were recruited from various local senior centres, hospital-affiliated programmes for the elderly, churches and from the general community. All were contacted via mail with an introductory letter, a Consent Form and the questionnaire. A follow-up phone call was made. **Setting:** Local hospital. **Country:** USA. **Funding Source:** Not reported.	The intervention consists of a one-off focus group discussion (6 were held, but participants only attended one), during which participants were seated round a rectangle table with the discussion moderator. The discussion centred on some questions, staring with general ones such as "what is difficult about being older these days?" and "what kind of things do you worry about?" "What is the effect of worry on you?" the discussions last for typically an hour and a half. **Providers/Deliverers:** Local hospital. **Length:** 1 hour and a half on average. **Duration:** One session. **Intensity:** One session. **Comparator:** No comparator group, pre and post test comparisons made. **Population details** **Inclusion:** Over 70 years and self-designated a worrier (someone who worries for at least 5% of the day). **Exclusion:** None stated. **Unit of allocation:** Individual. **Total:** N = 21. **Intervention:** N = 21. **Comparator:** No comparator. **Gender:** male = 1, female 20. **Mean age (range):** mean age - 78.1 yrs, and sd 4.8. **SES:** Not reported.	**Baseline comparability:** Only one group. Those that dropped out of the study were compared with those who completed the intervention. No statistical differences were found. **Attrition** **Number of participants completing study:** 21 completed the focus group but only 12 people were available at follow-up. **Reasons for non-completion:** Yes - they were followed-up with a phone call - a number could not be contacted because they had either changed address or phone number. One reported that they had dropped out because of experiencing negative feelings. **Process details** **Data collection methods:** Questionnaires **Statistical methods:** Pre-test and post-test comparisons made using a paired t-test. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** 12 months **Mental well-being measure(s):** Worry Questionnaire (derived from Wisocki), SCL-90R, A Life Satisfaction Questionnaire (no information given as to which one), percentage of the day spent worrying. **Power calculation:** Not presented.	For the percentage of the day spent worrying variable there was a significant reduction from pre- to post-test for the focus group participants: pre-test m=21.00 (sd 15.49), post-test m=3.57 (sd 3.43), t= 5.29, p < .01. There were no significant differences on other measures. [Worry Questionnaire: pre test m=15.52 (sd 13.71), post-test m=15.52 (sd 14.55), Life Satisfaction: pre-test m=13.09 (sd 3.53), post-test m=13.57 (sd3.38), t= -0.74, p>.05; SCL-90R: pre-test m=63.14 (sd 6.98), post-test m= 61.81 (sd 10.63), t= 0.63 p>.05. **Adverse effects:** None reported.	The study is compromised by the small sample size, lack of control group and no measure shortly after intervention to measure short-term effects. Intervention is only a one-off event. Intervention did not address coping strategies. Relied on self-selected sample. Not able to reach the majority of people who dropped out of the study to ask why they had done so. No measure shortly after intervention to measure short-term effects. The intervention was only a one-off event, which did not address coping strategies. Further research is needed to clarify the value of focus groups for this population. **Applicability:** The focus group method has been used extensively in the UK in research and market research. Older People's Forum are Government funded in Wales. The topic areas for discussion in many instances are largely led by the participants and so this type of intervention method is likely to be applicable to similar populations in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Rabiner et al. (2003) CBA - **Objective:** How does the Senior Companions Programme (SCP) affect the quality of life of frail older adults and their families/caregivers? **Recruitment:** The authors obtained the names of all new clients from the 50 randomly selected SCP projects and the 200 community agencies that were affiliated with the SCP. Letters and study brochures were sent to all prospective respondents. **Setting:** The SCP is delivered to individuals in their own home. **Country:** USA. **Funding Source:** Not reported.	The Senior Companions are volunteers (low income aged 60 and over) who receive a small tax free stipend for their service (currently $2.55 per hour) along with health insurance and other certain benefits. They help primarily homebound, elderly people in frail health, most of whom live alone, with tasks of daily living. They may buy groceries, prepare meals, do light chores, provide transportation, or do errands of various kinds. Importantly they provide regular human contact. **Providers/Deliverers:** Older volunteers. **Length: 4** hours per week. **Duration:** Not stated. **Intensity:** 1 or 2 visits per week. **Comparator:** Waiting list for the programme and older adults currently receiving other agency services. **Population details** **Inclusion:** Eligible clients had to be 65 years old and over, either newly receiving SCP services or newly placed on the waiting list, or newly provided with other community based services; residing in the community; reachable by telephone; and able to hear and respond to interview questions on their own behalf. **Exclusion:** None reported. **Unit of allocation:** Individual. **Total:** 2104 clients, 1050 family members. **Intervention:** Not reported. **Comparator:** Not reported. **Gender:** SCP = 86.5% female, WL= 84.4% female, OA=76.3% female. **Mean age (range):** SCP m=80.7, WL m=79.2, OA m=76.8. **SES:** None presented.	**Baseline comparability:** There were no significant differences between the three client groups for gender, being married or widowed, education, geographical location, self reported health, prevalence of medical conditions, or satisfaction with life. Clients from the Wait List and Other Agency comparison groups differed from the SCP groups with respect to age, ethnicity, living alone, ADL and depressive symptoms. **Attrition** **Number of participants completing study:** Of the 2104 interviewed at baseline, 436 were available at 9 month follow-up. **Reasons for non-completion:** Death (n=32), mental or physical incapacity (n=119), institutionalisation (n=13), no longer receiving SCP services/no longer on the waiting list/no longer receiving other agency services (n=178) and no phone or no valid phone number (n=154). **Process details** **Data collection methods:** Interview **Statistical methods:** Regression procedures were used on continuous outcome measures, controlling for baseline measures. (*The presented results are confusing - they do not present the results for the SCP group, but the comparative figures for the WL and other agency groups). **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** 9 months. **Mental well-being measure(s):** Philadelphia Geriatric Morale Scale (Lawton, 1972) referred to as life satisfaction in this paper. **Power calculation:** Not reported.	The three month outcomes show that relative to the Senior Companion Programme (SCP) clients, the wait list group had significantly lower life satisfaction (β=-.91, t=-3.68, p<.05). Participants receiving services from other agencies did not differ from the SCP group. At the 9 month follow up there was no difference in life satisfaction between the three groups. The same life satisfaction measure was administered to family members. There were no differences between wait list family members and SCP family members in life satisfaction at 3 and 9 months. **Adverse effects:** None reported.	They suggest that the loss to follow up might have compromised the statistical power of the analysis. The authors state that even though the contact time between the client and volunteer was minimal, it still produced an effect at 3 months. As participants were necessarily equivalent there may have been some variation that was not assessed that could have effected the outcomes. However the programme is a viable, low cost way to enable senior volunteers to serve frail elders in the community. **Applicability:** Volunteering is an important part of many older people's lives in the UK and the services provided by many voluntary organisations are crucial. Although conducted in the USA the intervention is likely to be applicable in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Richeson & McCullough (2003). Controlled non-randomised trial – **Objective:** A study to examine the effects on the subjective well-being of older adults by animal-assisted therapy intervention. **Recruitment:** Three nursing homes were approached as they already offered therapeutic recreation. The nursing home treatment teams selected potential participants. These people were then approached to consent. The initial sample frame N is not reported. **Setting:** 3 nursing homes **Country:** Southern Maine, New England, USA. **Funding Source:** Grants from the American Therapeutic Recreation Foundation and the University of Southern Maine College of Nursing and Health Professions.	This intervention is a therapeutic animal assisted therapy. Participants were visited by a therapy dog and it's handler and were allowed at least 10-15 minutes with them. They were allowed to pet the dog, feed it, walk it, talk to it. They were allowed to reminisce with the dog and dog handler. A student observer watched the procedure. After 10 to 15 minutes the dog, handler and observer would visit the next person on their list. **Providers/Deliverers:** Nursing home **Length:** 10-15 mins per participant, 1 hour per site. **Duration:** 4 weeks **Intensity:** weekly **Comparator:** group B were visited by student pairs for an equal amount of time as those visited by the dog (group A) for the same type of socialisation. **Population details** **Inclusion:** No cognitive impairments, no known fear of dogs, no allergy of dogs, an interest in being visited by a dog. **Exclusion:** Cognitive impairment. **Unit of allocation:** Individual. **Total:** N = 37. **Intervention:** 13 in Group A, 4 or 5 at each site **Comparator:** 12 in Group B, 4 at each site; 12 in the control group. **Gender:** 29 female and 8 male. **Mean age (range):** Range 51-101. Mean = 82.5. **SES:** Not reported.	**Baseline comparability:** Not reported **Attrition** **Number of participants completing study:** 37 (100%). **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Self-report **Statistical methods:** ANOVA and Turkey's HSD procedure and paired-samples t-tests. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** Followed up to end of intervention **Mental well-being measure(s):** The Positive and Negative Affect Scale (PANAS) and the Satisfaction with Life Scale. **Power calculation:** None reported	The study has serious methodological flaws. The presentation of the results indicates a lack of understanding of the type of analysis undertaken. No analyses are presented between groups and no means are presented for each group. Rather the analysis is undertaken on the whole sample. Therefore it is impossible to determine the effect of the intervention. **Adverse effects:** None reported	Other factors include the small sample size, lack of power calculation, small amount of contamination between groups, short intervention duration, and self-selected population. Small sample size, lack of power calculation, small amount of contamination between groups, short intervention duration, self-selected population. Ethics? **Applicability:** The poor quality of this study indicate that the applicability to the UK of the intervention is not possible to determine.

Study Details	Review Parameters	Review Parameters	Results	Comments
Schechtman & Ory (2001). Meta-analysis [MA] (Quality rating +) **Objective**: To estimate the effects of exercise in older adults on four scales of the SF-36 (general health perceptions, emotional health, bodily pain and social functioning). **Databases Searched:** Not relevant – meta-analysis of 4 trials that comprise the 'Frailty and Injuries: Cooperative Studies of Intervention Techniques' (FICSIT) programme. **Years:** not relevant **Funding Source**:	**Inclusion**: All of the trials required that the participants were community dwelling, ambulatory, with no severe cognitive impairment. Two required that participants had no major debilitating or terminal illness. 1 required that participants did not participate in vigorous exercise and one required a falls risk. The ages for inclusion varied for each trial from at least 65, 68-85, at least 70 and at least 75. The mean age of the participants was 73.4 (sd=6.1) and 55.6% were women. **Exclusion:** no reported **Number of studies included:** 4 studies, n=1733 **Data Extraction** Adjusted mean differences and standard errors Nothing else is reported referring to data extraction.	**Synthesis:** Aimed to assess the co-variate adjusted combined effect of interventions on post study values. Pooled estimates of the overall effect of interventions on each outcome measure. **Details of Heterogeneity:** Only in one site and with one intervention there.	The adjusted effect for all of the interventions combined (Exercise, resistance, balance, endurance, flexibility) increased the emotional health score by 3.97 (sd=2.0) p=.043. Endurance exercise programmes were associated with a significant increase (after subtracting off the control group change) in the emotional health score of 3.59 (sd=1.6), p=.027. Flexibility programmes were associated with a greater final emotional health score than control programmes (3.78, sd=1.6, p=.018). Gait speed was examined for association with changes in emotional health, but this was not significant. Exercise intensity was not a major factor. **Averse Effects:** The authors examined whether pain might compromise the potential beneficial effects of exercise, but found no effects for exercise on pain.	The authors suggest that the non effects of intensity might be partially due to insensitivity in the measure. However the SF-36 has been shown to be sensitive over time in older people. The analyses provide limited information about the type of exercise programme that is most likely to improve QOL, as the studies were not designed to be compared across sites. Also the authors do not have precise compliance data from the four sites. Strength - the FICSIT trials were conducted with older frail people, which contrasts with much of the exercise type research that focuses on younger, healthier populations. The trials are randomised and have decent sample sizes. Studies should identify the type of older adults who can be expected to achieve the greatest QOL benefits from various exercise interventions. Future work should incorporate more sensitive measures of QOL to examine the intervention more precisely, and the effects of adherence to exercise should be examined. **Applicability:** The meta-analysis was conducted with USA based studies. However it is likely that the results are applicable to similar populations (frail older people) in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Searle et al. (1998). A follow up study of a (before and after) - **Objective**: To examine the long term effects of leisure education on a sense of independence and psychological well-being among the elderly**.** **Recruitment:** The subjects were selected from an earlier study of 1406 older adults who had been interviewed in their own homes on a wide range of issues. Those who answered yes to a question on whether they had withdrawn from a leisure activity were contacted for this study. 30 original participants were recruited and randomly assigned to groups. 28 completed the first phase and 22 remained for this study. **Setting**: unclear **Country:** USA **Funding Source**: Not stated	The intervention consisted of leisure education. This consisted of a sequential series of pen and paper exercises, videos, discussions and recreation programme activities which served to help the subject assess the interests, obstacles and constraints, etc. **Providers/Deliverers:** Therapeutic recreation specialist. **Length**: Not stated **Duration**: Ranged from 14 to 25. **Intensity:** Not stated **Comparator:** No intervention, but the group were informed that they were the control group. **Population details** **Inclusion**: If they had withdrawn from a leisure activity over the past 12 months. **Exclusion:** none **Total**: n = 22 **Intervention**: n = 12 **Comparator:** n = 10 **Gender**: 2 males and 20 females **Mean age (range):** control group=76.2, intervention group=75.6 **SES:** The paper states that none were employed, and that the experimental group subjects had less education on average that the control groups subjects (no figures are presented).	**Baseline comparability:** Not stated. It is difficult to ascertain this, and other relevant factors as the paper reports the results of the follow up study and lacks information on the original study. **Attrition** **Number of participants completing study:** 22 **Reasons for non-completion** States they were unwilling or unable. **Process details** **Data collection methods** self report in the presence of the interviewer. **Statistical methods** MANCOVA **Unit of analysis** Individual **Unit of allocation:** Individual **Time to follow up**: 16 - 18 weeks after the intervention. **Mental well-being measure(s):** Life Satisfaction Index A (Neugarten, Havinghurst & Tobin, 1961). The Lcous of Control Scale (Levenson, 1974). **Power calculation**: none	The results showed that the subjects in the experimental group improved their locus of control from pre-test (m=3.86, sd=.31) to follow up test (m=4.06, sd=.27) compared to the control group at pre-test (m=3.59, sd=.57) and follow up (m=3.51, sd=.41) (F=1,19) 10.05, p<.005. The direction of the changes in life satisfaction were sustained but not significant. **Adverse effects:** none	The authors make no reference to the studies limitations, (e.g. small sample sizes, etc). **Applicability:** There is not enough information to determine generalisability.

Study Details	Intervention and population details	Analyses	Results	Comments
Sherer (1996) Controlled non-randomised trial - **Objective**: Hypothesis: Quality of life, feeling of self-esteem and satisfaction with life would be higher among the research group (receiving instruction in use of computers, and being allowed to use a computer at their will) than among the control group. **Recruitment:** All potential candidates (living in the long-term care facility and matching criteria) were told about the project, had witnessed a demonstration of the computer in action, and were asked to take part. **Setting**: Long-term care facility **Country:** Israel **Funding Source**: Not stated	A computer was located near the main entrance of the facility. Activity with the computer was coordinated by a social worker. Guided group sessions involving two or three residents at a time were held three days a week, and were organised so as to enable each participant to use the computer under supervision. At all other times the participants were allowed to used the computer at will. Special tools were developed to allow participants to use the computer. **Providers/Deliverers:** Social works, physiotherapists, three high school students. **Length**: Not stated **Duration**: 6 months **Intensity:** Sessions were conducted three days a week **Comparator:** Control group were denied access to the computer during the study period, and promised a special computer course at a later stage. **Population details** **Inclusion**: Residents in a home for the aged or attending day centre. **Exclusion** The presence of Alzheimer's disease or mental health problems. **Unit of allocation**: individual and by organisation **Total** n = 40 **Intervention**: n = 20 **Comparator** n= 20 **Gender**: Given for those that completed the study: Research group (n=19): Male 47%, Female 53%. Control group (n=14): Male 50%, Female 50%. **Mean age (range):** Given for those that completed the study: Research group (n=19): 80.36 years (s.d. 5.14). Control group (n=14): 79.85 years (s.d. 6.91) **SES:** none	**Baseline comparability:** There were no significant differences between the intervention and comparison groups with regard to age, gender, education or years in the institution. **Attrition** **Number of participants completing study** 30% of the intervention group dropped out of the study. Authors state that the control group was 'trimmed' by 30%. n=14 (70%) completed the intervention. **Reasons for non-completion** None given **Process details** **Data collection methods** Self-report **Statistical methods** A repeated-measure MANOVA was used to reveal differences between the subjects, with the self-esteem scores and with the eight scores of Morale and Life Satisfaction, as the within-subject repeated measure (time: before and after), and the Group (research, control) and Gender (male, female) as the between-subject factors. **Unit of analysis** individual **Unit of allocation:** individual and by organisation **Time to follow up**: 6 months from start of study **Mental well-being measure(s):** Rosenberg Self Esteem Scale (Rosenberg 1965). Morale and Life Satisfaction Scale (Clark & Anderson 1967; Peirce & Clark 1973). Both were back-translated into Hebrew. **Power calculation**: no	The authors state that a significant multivariate interaction effect emerged on the Group x within-subject factor ($F(1,24) = 4.14$, $p<.052$). Post hoc analysis ($t(26)=2.11$, $p<.02$) revealed that the interaction effect was caused by the difference in the research groups (before: M=2.72, s.d. =.48, after: M=3.18, s.d.= .37). For Morale and Life Satisfaction the within factor multivariate analysis revealed a significant difference (T2 = 2.33 ($F(8,17) = 4.96$, $p<.003$). The only significant multivariate interaction effect was Group x within-subject factors (T2 = 1.61, $F(9,16) = 2.87$, $p<.032$). Univariate analysis approached significance on Depression/satisfaction ($F(1,24) = 3.48$, $p<.074$), and indicated a significant difference on Negative Age: $F(1,24) = 5.75$, $p<.025$; and Will to Live: $F(1,24) = 4.35$, $p<.048$. Post hoc analysis ($t(26)=1.62$, $p<.055$) revealed that the interaction effect on Negative Age was caused by the difference in the 'after' measurement between the Research and Control groups (Research 'after': M=2.77, s.d. = 74; Control 'after': M=2.35, s.d. = .53). The difference on Will to Live ($t(26) = 3.78$, $p<.001$) was caused by the difference in the 'after' measurement between the Research and Control groups (Research' after': M=3.50, s.d.= .85; Control 'after': M=2.25, s.d. =.89; $F(3,52) = 5.76$, $p<.001$). **Adverse effects:** None	The measures used in the study were translated into Hebrew, and not subsequently validated. The change in outcome may be due to social interaction rather than the intervention, as this was not controlled for in the control group. In addition, the high risk of bias in the study weakens confidence in the results. **Applicability:** Likely to be limited to congregate living facility in Israel.

Study Details	Intervention and population details	Analyses	Results	Comments
Shin (1999). Controlled before and after study – **Objective:** What are the effects of an outdoor walking exercise program on cardio respiratory function, flexibility and emotional state of elderly Korean women? **Recruitment:** Final response rate is not reported. Female volunteer participants were recruited from elder centres at several apartments. **Setting:** an outdoor track at a central park in the city **Country:** Kunpo-city, Korea **Funding Source:** None reported	The intervention is an outdoor walking exercise programme, undertaken at a track. 5 minute warm up, 30-40 minutes of walking, 10 minutes of stretching, and a 5 minute cool down. 3 sessions per week. **Providers/Deliverers:** Not reported **Length:** 50 minutes gradually increasing up to an hour. **Duration:** 8 weeks **Intensity:** 3 x per week **Comparator:** No treatment **Population details** **Inclusion:** Age 60-75, sedentary (no regular exercise programme in the last 6 months) **Exclusion:** None reported **Unit of allocation:** Individual **Total:** N=35 **Intervention:** **Comparator:** **Gender:** 100% female **Mean age (range):** Range 60-75 **SES:** Not reported	**Baseline comparability:** yes for age, and the baseline outcome measures, including mental emotional state **Attrition** **Number of participants completing study:** n = 27 (77%) in total **Reasons for non-completion:** 5 of the IV group were excluded from the final sample as they failed to attend 75% of the exercise programme sessions. 2 of the C group were excluded, 1 experienced leg pain, 1 moved away **Process details** **Data collection methods:** Self-report **Statistical methods:** ANCOVA **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** Post-intervention **Mental well-being measure(s):** POMS, modified to be appropriate for Korean elders through cultural verification and psychometric evaluation. The modified version has 3 factors: anxiety-depression (21 items), vigor (8 items), anger (5 items) **Power calculation:** None presented	The exercise group had a significantly better POMS total emotional state score at post-test (M = 0.96) compared to the control group (M = 2.12) (no standard deviations are reported). The exercise group also had significantly improved scores on the dimensions of anxiety-depression ($F = 13.19$, $p<.001$) and vigour ($F = 50.09$, $p<.001$) compared to the control group (no means and standard deviations are reported). **Adverse effects:** None reported	The study looks at comparative differences post intervention between the two groups, but does not present results for any possible differences from baseline to follow up (the effect of the intervention from time 1 to time 2). The paper does not report means and standard deviations for the measures of interest. Strength - supports previous findings. Weakness - small sample size, poor reporting of analysis. **Applicability:** Applicability difficult to determine. Likely to be restricted only to settings or populations included in this study.

Study Details	Intervention and population details	Analyses	Results	Comments
Starkweather (2007). CBA - **Objective:** What is the effect of a physical activity intervention on perceived stress, mood, quality of life, serum interleukin-6 (IL-6), and cortisol among 10 older adults who were not engaging in regular physical activity? **Recruitment:** The author mailed an invitation to participate in the programme to residents of an assisted living community, if interested they were required to phone the researcher. **Setting:** The setting is not reported, although the procedure states that the participants met with a student nurse. **Country:** Spokane, Washington, USA. **Funding Source:** The Washington State University Intercollegiate College of Nursing Hansen Fund.	The intervention involved student nurses teaching the participants to ambulate (walk) at a pace adequate to raise heart rate to 60% of their maximum heart rate 1 day per week for 10 weeks. Participants were also encouraged to walk in their own time at their established pace for 30 min, 5 times per week for 10 weeks. Participants kept a daily journal of the amount of physical and social activity. **Providers/Deliverers:** Student nurse. **Length:** Approx 30 mins. **Duration:** 10 weeks. **Intensity:** Moderate. **Comparator:** Complete journal of daily amount and duration of social activity (visitors) and exercise undertaken. The group received instructions on how to fill out the journal and a 30 minute social visit from a student nurse once a week. **Population details** **Inclusion:** Resident of the assisted living community. Able to meet with the student nurse on Monday morning for 10 weeks. Ability to ambulate for 30-min intervals each day; English speaker. **Exclusion:** Inability to ambulate, diagnosis of neoplastic or major immune-based disease, psychoses, drug or alcohol abuse, taking anxiolytic or antidepressant medication, history of MI or mental confusion, memory problems or dementia. Resting HR above 100, or on rate altering medications. **Unit of allocation:** Individual. **Total:** n = 20. **Intervention:** n = 10. **Comparator:** n = 10. **Gender:** IV 3 M: 7 F; C 3M: 7F. Total 6M: 14 F. **Mean age (range):** 60-90 years. IV mean 75.5 +/- 7.5, C mean 76.7 +/- 7.3. **SES:** Not reported.	**Baseline comparability:** Yes in male: female ratio; age; comorbidities; diet and al non-smokers; number of personal interactions with other people per day. **Attrition** **Number of participants completing study:** N=20 (N=10 IV and N=10 C). **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Self-report and completion of daily journals. **Statistical methods:** Repeated measures ANOVA; t-tests. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** 11 weeks after baseline. **Mental well-being measure(s):** The Profile of Mood States (POMS) - list of 65 adjectives representative of mood states; indicate agreement using 5 point Likert-type scale. SF-36. **Power calculation:** Not reported.	Total mood disturbance decreased significantly in the exercise group ($t = 5.4$, $df = 9$, $p < .0001$), whereas scores in the control group remained the same (no means and standard deviations reported). Mood disturbance was also significantly decreased at T2 in the exercise group compared to the control group ($t = -2.9$, $df = 18$, $p < .009$; no means and standard deviations reported). In the exercise group, mental health improved significantly from T1 ($m=44.3$ +/- 4.7) to T2 ($m=62.4$ +/- 0.7) $t = -4.0$, $df = 9$, $p < .003$. No significant differences in SF-36 mental health were found in the control group. Compared to the control group, scores in the exercise group significantly improved at T2 for mental health ($F=7.2$, $df=18$, $p<.02$). **Adverse effects:** None reported.	The study focus is on a small volunteer group recruited through convenience sampling. The study is underpowered. The authors suggest that the use of randomised control groups is required in future research. The study supports findings of other studies finding benefits of physical activity on quality of life among older adults. The authors suggest that 10 weeks may not have allowed enough time for more significant improvements to be made. **Applicability:** The intervention is appealing but requires more investigation before the applicability to other populations can be determined.

Study Details	Intervention and population details	Analyses	Results	Comments
Stewart et al. (1997) Controlled before and after– **Objective**: How effective was intervention in increasing physical activity of older adults recruited from communal housing facilities? **Recruitment:** Target population was residents from 2 government-subsidised housing facilities, 1 intervention & 1 control. Further group of 22 people from a senior centre were tested with the intervention, apparently to validate it. Individuals were first recruited to attend an informal meeting at which time they were invited to enrol. They were contacted via flyers distributed to their apartments, advertisements in the facility newsletter, presentations by staff at congregate meals and resident meetings, and personal letters. The validation sample from the senior centre were recruited via advertising with an invitation, posters at the centre and an article in the centres newsletter. **Setting**: Classes were held at various locations in the community such as the recreation department, community college, YMCA/YWCA and senior centre. At each congregate housing facility a general conditioning class was held regularly and there was a fitness room available.) **Country:** California, USA	The intervention aimed to encourage participation in moderate intensity physical activity classes and programmes already available in the community. These included activities such as organised walking groups, swimming, tai chi, strength training, dancing and recreational sports. The classes were available for the general older adult population as well as for those with specific disabilities. Participants were encouraged to try one or more activities suited to their interests, abilities, income and transportation resources. Those who were already participating in some form of activity were encouraged to adopt a complementary activity. The intervention consisted of a) a motivational interview emphasising health benefits, etc., b) one-to-one assistance in selecting appropriate classes, c) assistance in self monitoring techniques through activity logs, d) a directory of activity classes, e) meetings to provide information about countering common myths of exercise, f) written materials and a monthly newsletter g) encouragement and support by staff at group meetings and via telephone - approx. 10 calls per person over the 6 months, h)incentives such as chances to win small prizes for attending meetings. **Providers/Deliverers:** project staff **Length**: Minimum of 30 minutes **Duration**: 6 months **Intensity:** Participants were encouraged to aim for a target of 3-5 times a week and to increase activities in a progressive manner. In addition to the exercise participants were encouraged to attend six monthly group meetings. **Comparator:** Waiting list control group. **Population details** **Inclusion**: A one year commitment to the programme. **Exclusion:** None – individuals with health problems were encouraged to join in. **Intervention**: 59 **Comparator:** 30 **Similar in agw & gender** **SES:** Intervention group had an average of 13.6 yrs of education and the control group 14.2 years of education. **Funding Source**: Preparation of the manuscript supported by Grant from the National Institute on Aging (AG09931) and by the George and Katherine Dick Fund.	**Baseline comparability:** There were no significant differences at baseline between the intervention and control group for demographic, health and lifestyle characteristics, except that more of those in the intervention group did not speak English as their main language. **Attrition** **Number of participants completing study** 59 from intervention and 30 from the comparison group - 91% of those allocated to the intervention and all of the comparison. **Reasons for non-completion** Relocation out of the area and loss of interest. **Process details** **Data collection methods** Self-report **Statistical methods** ANCOVA **Unit of analysis** Group **Unit of allocation:** Group **Time to follow up**: over a 5 month period **Mental well-being measure(s):** Self Esteem (Rosenberg Scale); Life satisfaction (Cantrils ladder); sense of mastery (Pearlin) **Power calculation**: None , but this is a weak study .	Self esteem improved in the intervention group relative to the control group ($F=4.05$, $p<0.05$). There were no differences found for sense of mastery and life satisfaction. As the authors regarded an increase in physical activity as their primary objective, however, they did not report any means, standard deviations or effect sizes. **Adverse effects:** none	The authors state the results suggest that seniors of all ages and with diverse health status can be helped to use existing community resources to facilitate physical activity. The authors state that they chose the two facilities because of their close match on a number of demographic and organisational variables. Low levels of drop out The authors acknowledge the lack of a randomised design. They also say that most of the classes were only offered once or twice a week, limiting the potential frequency of participation. **Applicability:** Although conducted in the USA the intervention could be usefully applied in the UK as most local authorities provide exercise classes specifically tailored towards the older population.

Study Details	Intervention and population details	Analyses	Results	Comments
Stewart et al. (2001) Single group BA – **Objective:** What is the impact of support groups on widowed seniors' loneliness, affect, and perceived support? **Recruitment:** Not reported. **Setting:** Not clear - the paper states that an initial focus group recommended a structured format, social events and meeting in seniors' centres. The results section mentions four groups, but does not provide any details. **Country:** Not reported, suggest Canada. **Funding Source:** The National Health Research and Development Program (NHRDP), Health Canada, through a special competition co-sponsored by the seniors Independence Research Program (SIRP).	Support groups for older widowers. During these sessions widows were invited to discuss their priority needs and relevant issues. If they chose their discussion was augmented by guest lecturers, case studies, audio-visual aids and role playing exercises. Peer and professional leaders provided information resources requested by group members. **Providers/Deliverers:** Peer leaders and professional leaders. **Length:** 1 to 1 1/2 hours per session. **Duration:** 20 weeks. **Intensity:** n/a. **Comparator:** No comparator. **Population details** **Inclusion:** Age 55 and over, no neurological deficits, spoke and wrote English, were not currently attending a bereavement self-help or support group. **Exclusion:** None stated. **Unit of allocation:** Individual. **Total:** N = 28. **Intervention:** N = 28 **Comparator:** No comparator **Gender:** Not reported. **Mean age (range):** Range 54-77, mean = 66. **SES:** Not presented.	**Baseline comparability:** Not reported **Attrition** **Number of participants completing study:** N = 23 of 28. (82%) **Reasons for non-completion:** Not reported. **Process details** **Data collection methods:** Semi-structured interview guide. Self report measures. **Statistical methods:** Repeated measures ANOVA, Significant F tests were followed by multiple t-tests. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** 3 months post baseline. **Mental well-being measure(s):** Positive and negative affect schedule (PANAS). 20 items measuring positive affect and negative affect. The emotional/ social loneliness inventory (ESLI). **Power calculation:** Not reported.	There was a significant increase in positive affect from pre-test to post-test to 3-month delayed post-test ($t(1,10) = 6.08$, $p = 0.03$). No significant decrease was found in negative affect. A trend is reported toward diminished social isolation and emotional loneliness, but this is not significant. **Adverse effects:** None reported.	The paper lacks methodological details and clarity around the analysis. There is no comparator group. Also the paper talks about pooling data across three of the groups and considering one group separately. However the analysis does not appear to present this format, and examines pre and post test scores for one group. Weaknesses include the differences in intervention dose, and the absence of a control group. **Applicability:** The intervention is one that could be highly appropriate in the UK. However the weak methodology and small sample size indicate that any generalisability is not clear.

Study Details	Intervention and population details	Analyses	Results	Comments
Stiggelbout et al. (2007). RCT with cross-over design – **Objective**: The effects of MBvO (more exercise for seniors) gymnastics on health related quality of life and functional status of independently living participants. **Recruitment:** The Groningen Active Living Model was used to recruit subjects. About 4600 older adults - selected at random from the municipal registers of three cities in The Netherlands received a written invitation for a screening procedure. Response rate not reported. **Setting**: Community Centre **Country:** The Netherlands **Funding Source**: Netherlands Health Research and Development Council	The exercise intervention consists of light aerobic exercise of mainly muscle strengthening and improving co-ordination. **Providers/Deliverers:** A trained instructor. **Length**: 45 minutes **Duration**: 10 weeks **Intensity:** Condition 1=once per week, condition 2=twice per week. **Comparator:** 1) The two exercise conditions (once or twice a week for the same programme) were combined into one exercise group and compared with the control group. 2) Each condition was compared with each other. The control group followed a health education programme session designed to provide attention, social interaction and health education on lifestyle aspects. **Population details** **Inclusion**: 65-80 years and living independently. Not sufficiently active based on according to pre set criteria. **Exclusion** Above the median on a walking endurance test. **Unit of allocation**: individual and group allocation **Total** n=125 started **Intervention**: n = 68 **Comparator** n = 193 **Gender**: 37%male, 63% female **Mean age (range):** Mean age=71 (sd 4.1) **SES:** 51% low education, 41% middle level of education, 8% high level of education.	**Baseline comparability:** There were no differences in gender, marital status, level of education, housing situation and activities. Age differed at .05. **Attrition** **Number of participants completing study** Total = 98/125 Exercise group = 53/68 Control group = 126/193 **Reasons for non-completion** None stated **Process details** **Data collection methods** interview **Statistical methods** Repeated measures ANOVA **Unit of analysis** Individual **Unit of allocation:** individual and group **Time to follow up**: 10 week intervention, follow up period not stated. **Mental well-being measure(s):** SF-36 **Power calculation**: Trial was designed to detect a minimum effect size of -0.30 with 80% power at .05.	No effect sizes reported as results not significant for the mental health factor of the SF-36. Mean scores and standard deviations for the SF-36 mental health - Exercise one a week: pre m=77.1 sd=15.0, post m=77.1 sd=16.4; exercise twice a week: pre m=80.0 sd=13.3, post m=77.9, sd=17.8; control group: pre m=76.8 sd=17.9, post m=77.7 sd=16.7. No significant group x time interaction. **Adverse effects:** none	Despite the power calculation, the trial is underpowered owing to drop out. The authors suggest that the protocol may have caused some bias. They state that a substantial number (but do not provide the number) of older adults refused to participate when they were expected to do so twice a week, and they did not carry out Intention to treat analysis. **Applicability:** Although conducted in the Netherlands the intervention is likely to be applicable to similar populations and settings in the UK.

Study Details	Intervention and population details	Analyses	Results	Comments
Tanaka et al. (2002) Single group before and after - **Objective:** Do short naps and exercise improve sleep quality and mental health in the elderly? **Recruitment:** Not reported. **Setting:** Not reported. **Country:** Not reported (author affiliation suggests Japan). **Funding Source:** Not reported.	The intervention consisted of a short nap after lunch (30 mins between 13.00 and 15.00) evening exercise of moderate intensity including stretching and flexibility (30 mins from 17.00) for 4 weeks in the winter. **Providers/Deliverers:** Not reported **Length:** 30 minutes **Duration:** 4 weeks **Intensity:** Moderate **Comparator:** N/A **Population details** **Inclusion:** Able to lead a normal life at home. **Exclusion:** Sleep problems due to illness **Unit of allocation:** Individual **Total:** n=11 **Intervention:** Not reported **Comparator:** Not reported **Gender:** Not reported **Mean age (range):** 73.8 +/- 5.4 **SES:** Not reported	**Baseline comparability:** N/A **Attrition** **Number of participants completing study:** n = 11 **Reasons for non-completion:** N/A **Process details** **Data collection methods:** Self-report, Actigraph **Statistical methods:** Not reported, but looks like t-tests. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** After intervention **Mental well-being measure(s):** General Health Questionnaire **Power calculation:** Not reported	The authors report a significant decrease in GHQ scores from pre- to post-intervention, suggesting improvement to mental health. However no means or standard deviations are reported. **Adverse effects:** None reported	The study is underpowered for any statistical comparisons, and lacks significant methodological detail. Support for previous research findings, suggests that findings show that this type of intervention is effective. Very limited information given on participants and methods. **Applicability:** .due to the lack of information in the paper it is not possible to determine the applicability of the intervention to the UK.

<table>
<tr><th>Study Details</th><th>Intervention and population details</th><th>Analyses</th><th>Results</th><th>Comments</th></tr>
<tr>
<td>Topp & Stevenson (1994).

Conrolled non-randomised trial -

Objective:
Do attendance and effort differentiate changes in cognitive functioning among adults age 60 or older enrolled in a 9 month exercise programme?

Recruitment:
newspaper advertisements soliciting adult volunteers.

Setting:
Not reported.

Country:
Not reported.

Funding Source:
Not reported.</td>
<td>The intervention consisted of supervised group exercise sessions, 3 times per week for 9 months.15 min warm up and stretching, 30 min aerobic cycling, 10-15 min cool down, slow walking and stretching. Groups split into high and low effort and attendance groups.

Providers/Deliverers: Exercise leaders.

Length: 1 hour.

Duration: 9 months.

Intensity: 3 sessions per week, low or moderate intensity exercise depending on group.

Comparator: The intervention is compared between two groups, 1)low attendance and effort group 2) attendance and effort.

<u>Population details</u>
Inclusion: Age 60 plus.

Exclusion: History of heart or vessel disease, hypertension or diabetes or drug use consistent with these conditions. Condition that would place them at risk from exercise.

Unit of allocation: Individual.

Total: 97.
Intervention: Not reported.
Comparator: Not reported.

Gender: Not reported.

Mean age (range): Mean 64 +/- 3.4; range 60-81.

SES: Not reported</td>
<td>Baseline comparability: Not reported

<u>Attrition</u>
Number of participants completing study: 66 of 97 (68%)

Reasons for non-completion:
Medical reasons (3), attrition (14), completed intervention but did not complete all tests at each testing time

<u>Process details</u>
Data collection methods:
Self-report and interview

Statistical methods:
Repeated measures ANOVA, Tukey's Least Significant Difference test was used for post hoc analysis

Unit of analysis: Individual

Time to follow up: Post intervention - 9 months.

Mental well-being measure(s):
Life Satisfaction (Neugarten et al. 1961).

Power calculation: Not presented</td>
<td>Neither group showed a significant change in their life satisfaction scores over the duration of the study (only means provided, no standard deviations are reported). Group 1 began the study with significantly higher life satisfaction.
<table>
<tr><td></td><td>Group 1</td><td>Group 2</td></tr>
<tr><td>Baseline</td><td>17.1</td><td>14.3</td></tr>
<tr><td>4.5 months</td><td>17.4</td><td>15.1</td></tr>
<tr><td>9 months</td><td>17.6</td><td>14.7</td></tr>
</table>
Adverse effects:
The high attendance and effort group became more worried about their health (as measured by perceptions of health worry) over time.</td>
<td>Lacks methodological details. Limited implications.

The authors were unable to demonstrate a differential impact of intensity of exercise.

Applicability:
Generalisability is compromised by the methodological limitations of the study.</td>
</tr>
</table>

Study Details	Intervention and population details	Analyses	Results	Comments
Trefler et al (2004) CNRT - **Objective**: To investigate the outcomes of individualised wheelchair systems for persons over 60 years of age who are residents in long-term care facilities, including the documentation of functional quality of life for consumers of individualised wheelchair systems. **Recruitment:** Facility staff approached eligible residents for participation in the study. They were given a detailed explanation about the study and asked if they wished to participate. **Setting**: Long-term care facilities **Country:** Not stated. Authors located in USA **Funding Source**: Sunrise Medical Inc provided funding for the student fellowship, technical support and in-services.	Seating evaluation and receipt and fitting of a wheelchair system. **Providers/Deliverers:** A graduate student (licensed occupational therapist) undertook seating evaluation and fitting. A second graduate student performed outcome measurement testing. **Length**: Usual use of wheelchair (i.e. six hours or more per day). **Duration**: 6 months for Group A and 3 months for Group B. **Intensity:** n/a **Comparator:** Group B received their seating evaluation 3 months after the initial testing session. **Population details** **Inclusion**: (a) Resident in one of 3 nursing homes, (b) uses a wheelchair system for 6 hours or better on a daily basis, (c) 60 years of age or older, (d) ability to understand simple commands and answer questions in a coherent and consistent manner, (e) adequate motor abilities to propel their wheel chair and, (f) without a decubitus ulcer and/or dementia or Alzheimer's disease. **Exclusion** none **Unit of allocation**: individual, group (to intervention groups) and organisation (facility) **Total** n = 34 **Intervention**: n = 19 **Comparator** n = 15 **Gender**: 19% Male; 81% Female **Mean age (range):** M= 82.4 years (s.d. 9.8) **SES:** none	**Baseline comparability:** Intervention groups were balanced for age (Group A 83.56 years, s.d. 10.3; Group B 80.7 years, s.d. 9.4, p=.44), ethnicity (Group A 83.3% Caucasian; Group B 100% Caucasian, p=.11) and gender (Group A 77.7% women; Group B 85.7% women, p=.35). **Attrition** **Number of completers:** 24 (71%) **Reasons for non-completion** Three withdrew due to requirements of the study (i.e. one gave his wheelchair system back because he did not like the mechanical features of the system, two were dropped because of their large body size and the inability to prescribe large enough wheelchair bases to meet their needs). Seven others did not finish the study because of complications that included death, stroke, and/or change in cognitive status. **Process details** **Data collection by s**elf-report **Statistical methods** Outcomes were analysed using descriptive statistics and repeated measures analysis of variance (ANOVA) with the groups equalling the between factor and the repeated visits equalling the within factor. All data were analysed with intent to treat. **Unit of analysis:** Individual **Time to follow up**: 6 months **Mental well-being measure:** SF36 **Power calculation**: According to SF-36 manual, comparing post-intervention and pre-intervention needs average of 17 participants per group if there is difference (20+ points) between groups.	At baseline there were no significant differences in six of the eight SF-36 component scores between groups. Because two of the components were significantly different (bodily pain and mental health) at baseline, the baseline score was controlled for subsequent analysis. Only one component, social functioning, showed significant changes (p=.009) over time between the two groups. A trend was seen, that with receipt of the new wheelchair, the social functioning scores increased but, (as shown in Group A) subsequently dropped after several months. **Adverse effects:** none	The authors indicate that the large attrition rates reduced the power of the study. Small sample size may have contributed to the lack of statistically significant findings (for the outcome measure). **Applicability:** Although conducted in the USA the intervention is likely to be applicable to similar populations in the UK. However the methodological limitations reduce the generalisability of the intervention.

Study Details	Intervention and population details	Analyses	Results	Comments
Tsutsumi et al. (1997) Controlled non-randomised trial - **Objective:** The study was conducted to explore the possible benefits of strength training on various health variables in older adults. **Recruitment:** Recruited through advertisement. No information about response rate. **Setting:** Unclear, but they attended supervised training sessions. **Country:** Unclear, but probably USA. **Funding Source:** Not stated.	Strength training consisting of weight machines that did leg extension, leg curl, shoulder press, bench press, lateral pull-down, fly, triceps press down, arm curl, back extension, seated row and abdominal flexion. **Providers/Deliverers:** No information given. **Length:** 3 per week. **Duration:** 12 weeks. **Intensity:** High intensity = 75-85% of estimated 1 repetition maximum with 8-12 repetitions; the low intensity= 55-65% of estimated 1 repetition with 12-16 repetitions. **Comparator:** No exercise control groups. **Population details** **Inclusion:** Minimum age of 60, medically healthy and sedentary, free from cardiovascular disease or not currently taking medication for treatment of hypertension. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** n = 45 were recruited in total. 3 dropped out after the start, leaving a total n of 42. These were assigned into 3 groups. **Intervention:** High intensity strength training (n = 14). Low intensity strength training (n = 14). **Comparator:** Non-exercise control (n = 14). **Gender:** 9 males, 36 females. **Mean age (range):** 61-86 mean age 68.8 sd=5.7. **SES:** None stated.	**Baseline comparability:** Minimum age of 60, medically healthy and sedentary, free from cardiovascular disease or not currently taking medication for treatment of hypertension. **Attrition** **Number of participants completing study:** n = 28. **Reasons for non-completion:** Yes. **Process details** **Data collection methods:** Not stated. **Statistical methods:** MANOVA. **Unit of analysis:** Individual. **Unit of allocation:** individual. **Time to follow up:** 12 weeks (at the end of the study). **Mental well-being measure(s):** Profile of Mood States (POMS). **Power calculation:** Not reported.	There was a significant main effect of time Willks Lambda=16.30, p<.001; and a group x time interaction effect, Willk's Lambda=2.13, p<.05. There was a significant group x time interaction for tension, F(2,38)=4.25, p<.05, and vigor F(2,38=7.25, p<.001. Subjects in both intensity groups showed reductions in tension while subjects in control experienced no significant changes. Vigour improved for both intensity groups and the control group. No data for the means and standard deviations are reported, bar graphs are presented but it is difficult to ascertain exact mean scores. **Adverse effects:** None reported.	The small sample size suggests that the results are not powerful enough to detect any effects. Strengths -The results support other Subjects were healthier than average, educated and highly motivated, and predominantly female. **Applicability:** The small unrepresentative sample limit any generalisability.

Study Details	Intervention and population details	Analyses	Results	Comments
Tsutsumi et al. (1998). –Controlled non-randomised trial - **Objective:** What are the effects of strength training (of high and moderate intensities) on measures of psychological health in a population of older women? **Recruitment:** Not specified. **Setting:** Gymnasium **Country:** Not stated: researchers are based in Japan and USA **Funding Source:** Not specified.	High intensity strength training and moderate intensity strength training using weight machines. **Providers/Deliverers:** Not specified **Length:** The length of time it took to complete 12 weight machine exercises, three times per week on non consecutive days. **Duration:** 12 weeks **Intensity:** High (75-85% of one repetition maximum); and moderate (55-65% of one repetition maximum). **Comparator:** Non-exercising control. Not described. **Population details** **Inclusion:** Women between 60 and 86 years, sedentary (i.e. not engaged in exercise in the previous 6 months). **Exclusion:** Not specified **Unit of allocation:** High intensity strength training and moderate intensity strength training using weight machines. **Total:** N=36 **Intervention:** n = 12 in each intervention arm (x2) **Comparator:** n = 12 in control group **Gender:** 100% female **Mean age (range):** M=68.5, sd=6.1, range 60-86 years **SES:** None	**Baseline comparability:** Yes for baseline measures of body fat, muscle strength and psychological traits **Attrition** **Number of participants completing study:** N=36, 100% **Reasons for non-completion:** Not applicable **Process details** **Data collection methods:** Self-report **Statistical methods:** A two-factor (group x time) repeated-measure analysis of variance. If analysis was significant, Tukey post hoc test was used to evaluate significance of differences between pre- and post-test scores among the three groups. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** Not clear **Mental well-being measure(s):** The Profile of Mood States **Power calculation:** None reported	Repeated-measures analysis of variance showed significant interactions of group x time on Vigour ($F_{2,33}=7.72$, $p<.01$), the Tukey HSD test showed subjects in the High and Moderate Intensity groups reported a significant increases in scores on Vigour, while the Control group's mean score decreased. High intensity n=12, pre m=18.25, sd=7.26, post m=23.08, sd=5.90; moderate intensity n=12, pre m=19.08, sd=5.37, post m=24.50 sd=4.19; control n=12, pre m=19.92 sd=3.63, post m=16.92 sd=4.89). **Adverse effects:** None reported	The study suggests that strength training can yield significant improvement in psychological health, in particular improvements in vigour. However the high risk of bias in the study weakens confidence in the results. It is also not clear why the authors do not report the findings for the rest of the POMS dimensions, or the overall total mood score from the POMS. Given that vigour is also a somatic symptom; the study may not have found effects for mental well-being. The authors suggest the results support other research demonstrating the benefits of strength training on psychological health. However the results do not suggest whether high or moderate intensity may be preferable, although 3 days per week may be useful. Aspects of training such as intensity and frequency need to be explored over a longer training period in future. **Applicability:** The generalisability of the results are compromised by methodological limitations.

<table>
<tr><th>Study Details</th><th>Intervention and population details</th><th>Analyses</th><th>Results</th><th>Comments</th></tr>
<tr>
<td>Watanabe et al. (2001).

Single group before and after -

Objective:
What are the effects of increasing energy expenditure during exercise on psychological well-being in older adults?

Recruitment:
Recruited by an advert in the local newspaper for "a health promotion program for older people at Nagoya City University".

Setting:
Not reported but the intervention is water based.

Country:
Nagoya City University, Japan

Funding Source:
Not reported.</td>
<td>Water-based endurance and resistance exercise intervention. Three supervised sessions per week for 12 weeks. 20 minute warm up, 20 min brisk walk at moderate intensity, 20 min "aerobics-dance type" movements and 10 min resistance training using water resistance, then cool down

Providers/Deliverers: Not reported (the authors of the paper?).

Length: Approx 70 minutes.

Duration: 12 weeks.

Intensity: Moderate.

Comparator: No control group.

<u>Population details</u>
Inclusion: over 60, sedentary as judged by an interview, did not take medications which affect heart rates, free from clinical manifestations of diseases.

Exclusion: Not reported.
Unit of allocation: Individual.

Total: n=33.
Intervention: Not reported.
Comparator: Not reported.
Gender: M 30: F 70% 10 men and 23 women).

Mean age (range): Range 60-82; mean 68.6 +- 4.7.

SES: Not reported.</td>
<td>Baseline comparability:
Yes for weight, age, height, peak VO2, VO2 lactate threshold ad psychological variables, apart from anger-hostility.

<u>Attrition</u>
Number of participants completing study: n=33

Reasons for non-completion:
Not applicable.

<u>Process details</u>
Data collection methods:
Interview, self report and assessor measured.

Statistical methods:
Non-parametric statistics (Kruskal Wallis).

Unit of analysis: Individual.

Unit of allocation: Individual.

Time to follow up: After intervention.

Mental well-being measure(s):
Profile of Mood States (POMS).

Power calculation: Not reported.</td>
<td>The authors analyse the results across 3 groups, but give no indication as to how many participants are in each one.

Significant differences are reported among the 3 groups for the POMS dimension of depression-dejection (H = 6.0, p< .05). Over time the moderate and high energy expenditure groups showed a decrease in depression-dejection, whereas the low expenditure group remained the same.
<table>
<tr><th></th><th>Pre test M</th><th>Pre test sd</th><th>Post test M</th><th>Post test sd</th></tr>
<tr><td>Low</td><td>5.1</td><td>6.0</td><td>5.2</td><td>4.7</td></tr>
<tr><td>Moderate</td><td>4.5</td><td>2.8</td><td>2.6</td><td>2.1</td></tr>
<tr><td>High</td><td>9.8</td><td>8.2</td><td>4.6</td><td>4.7</td></tr>
</table>
Adverse effects: None reported.</td>
<td>The study is underpowered for any statistical comparisons.

The authors conclude that the exercise programme has a positive effect on psychological mood.

Population more highly educated and more highly motivated than the general population.

Applicability:
Methodological weaknesses limit generalisability</td>
</tr>
</table>

Study Details	Review Parameters	Review Parameters	Results	Comments
Wheeler, Gorey & Greenblatt (1998). MA - **Objective**: How effective is volunteering in affecting beneficial change among both older volunteers and the people they serve? **Databases Searched:** Not clear. The paper states that computerised databases of psychological, sociological and social work abstracts as well as dissertation abstracts international were searched. Bibliographic reviews of relevant manuscripts were also undertaken (the paper does not specify which ones). **Years:** 1965-present **Funding Source**: Not reported.	**Inclusion**: All forms of volunteer activities were included. **Exclusion:** None stated **Number of studies included:** 37 studies (median n= 98). 34 of these had been undertaken in the USA, 3 in Canada. States that studies were only included if their effect sizes were calculable. 25 examined life satisfaction, 5 examined depression/isolation, 5 examined client assessed helpfulness and 2 examined goal attainment. 29 hypothesised the effects on the older volunteers themselves, 9 on the people they served and one study reported both volunteer and client outcomes. Study designs included - cross sectional (x20), pre-experimental (x9), quasi-experimental (x 7), experiemental (x1). The mean age was 71, predominantly white (90%) and female (72%) and not married. **Data Extraction:** Very limited data on study and participant characteristics .	**Synthesis:** Meta-analysis (scale free metric/effect size - the r index). This was converted into Cohen's (1988) U_3. This provides an indication of the % differences. Results were combined from 29 studies reporting outcomes among older volunteers (this involved pooling across all of the outcomes, not just the measures of life satisfaction). The type of volunteer services were examined as were the effects of 9 studies that reported outcomes among the people the older volunteers serve. **Details of Heterogeneity:** Unclear - not examined	A significant volunteer-QOL association was found *r* -index =.252, combined p<.001. Conversion to Cohen's U_3 suggests that 75% of the older volunteers enjoy a greater quality of life than the average non-volunteers. The type of volunteer services was also a factor - those who engaged in direct helping (n=12 studies) seemed to derive greater rewards from volunteering ($M_{\text{r-index}}$ =.358, sd=.134) than elders engaged in more indirect less formally helping roles (n=17 studies, M=.173, Sd=.132) t(27)=3.70, p<.01. Nearly 8 out of every 10 formally helping older volunteers scored higher on quality of life measures than the average non-volunteer did (U_3=.779, combined p<.01). A significant effect of volunteering was found for their clients (n=9 studies) 85% of the clients did better than the average person in a comparison group. Nine out of every ten clients 'counselled' by older volunteers experienced more improvement on outcome measures that their average counterpart who did not experience such an intervention (U_3=.913, combined p<.01). **Averse Effects:** None reported	The authors suggest that their results are not effected by publication bias. The potential appeal of the findings is countered by the methodology. The authors pool a wide range of outcome measures under the heading 'quality of life' to ascertain the overall effect of the volunteering. Although a large proportion are likely to be the life satisfaction measures, the actual number is not presented and the results for this outcome are not examined seperately. No details are provided of any quality assessment. **Applicability:** Volunteering is regarding as important for healthy and active ageing in later life. Despite the methodological limitations the intervention is generalisable and results indicate that volunteering interventions could be applicable to UK populations.

Study Details	Intervention and population details	Analyses	Results	Comments
White et al. (2002) RCT - **Objective**: To determine the psychosocial effects of providing Internet access to older adults. **Recruitment:** Information sessions open to all residents on the general use of computers and the Internet were provided at each facility (congregate housing). Volunteers were sought at these sessions and through posted flyers. At the nursing facilities health care personnel were asked to identify residents whom they though had the cognitive ability to participate. **Setting**: Four congregate housing sites and two nursing homes **Country:** Not stated. Authors from Durham, USA **Funding Source**: Not stated	Nine hours of group training over a two-week period, which covered basic computer operation, use of e-mail, and an introduction to accessing the WWW. Simeon version 4.1.1. was used as the electronic-mail interface and Netscape version 2.02 browser was used for the WWW. A training manual covering these topics was developed specifically for the study and distributed to each participant. After the initial training session the computer trainer was available at each site for about 2 hours per week to answer questions and help those who experienced difficulty. The trainer helped participants find places (websites) of interest on the WWW and, some participants agreed to be e-mail pals with middle school students in Kansas. The trainer also was available at other times by phone or e-mail. **Providers/Deliverers:** Young college graduate, well versed in the use of the Internet, who interacted well with older adults. **Length**: 3 x 2 hours sessions and 3 x 1 hour sessions, over 20 weeks. **Duration**: Two-week period for training. 24 hour access to computer for 20 weeks. **Intensity:** n/a **Comparator:** Control subjects did not receive intervention. Were on a waiting list to receive training in 5 months time. **Population details** **Inclusion**: All residents of congregate housing. Cognitively intact nursing home residents. **Exclusion** Cognitive impairment. **Unit of allocation**: individual and group **Total** n = 100 **Intervention**: n = 51 **Comparator** n = 49 **Gender**: Intervention group: 29% male, 71% female. Control group: 18% male, 82% female. **Mean age (range):** Intervention group: M=71 (s.d. 12). Control group: M=72 (s.d.11) **SES:** 71% high school graduates in intervention group and 77% in control group	**Baseline comparability:** No significant differences between intervention & control groups on demographic & outcome variables at baseline. **Attrition** In intervention group 12 (24%) dropped out 4 control participants (8%) included in analysis. **Reasons for non-completion** Nine dropped out of training for health problems or insufficient time. One died, one could not be tested at follow-up for physical illness, one not specified. **Process details** **Data collection methods** interview **Statistical methods** Baseline differences in general characteristics and outcome measures were assessed by either the non-parametric Wilcoxon rank sum test for continuous measures or a Chi Square test for categorical measures. An intention-to-treat model of analysis was used to compare the intervention and control group. Change scores were calculated for the Perceived control measure by subtracting the baseline score from the follow-up score. Difference in change scores between the two groups were assessed using the Cochran-Mantel-Haenszel Chi Square test. Chi-square tests were used to further evaluate potential difference in characteristics of the subgroup in the intervention group who used technology (WWW or email) on a regular basis compared to the subgroup that did not. The Wilcoxon test was used to identify differences in outcome measures. **Unit of analysis:** individual **Unit of allocation:** individual & group **Time to follow up**: Immediately after intervention. **Mental well-being measure(s):** Perceived Control of Life Situations (Eizenman et al. 1997). Single life satisfaction item was include with five possible response categories ranging from 'not satisfied' to 'very satisfied'. **Power calculation**: no	There were no statistically significant changes in Perceived Control of Life Situations (Change scores Median (interquartile range) for Intervention = 0 (-2,1); Control = -1 (-1, 1)) or Life Satisfaction (Change scores Median for Intervention Worse = 29, Unchanged = 48, Better = 23; Control Worse = 24, Unchanged = 56, Better = 20) between the intervention and control groups. There were no statistically significant changes in Perceived Control of Life Situations (Change scores Median (interquartile range) for Intervention =-1 (-3, 0); Control = 0 (-2, 7)) or Life Satisfaction (Change scores Median for Intervention Worse = 24, Unchanged = 55, Better = 21; Control Worse = 37, Unchanged = 37, Better = 26) between the Internet Users and Internet non-users. There were no statistically significant differences between the intervention and control groups on the psychosocial scales. However, the high risk of bias in the study, weakens confidence in the results **Adverse effects:** none	No information given on the method of randomisation of participants, or whether participants could manipulate the allocation process, therefore potential for selection bias which could positively affect results. No information on whether researchers were blinded, so that they did not know which group is receiving the intervention, therefore possibility of performance bias. Subjects were not blinded to the study, but were asked not to share what they were learning with members of the control group. No information on whether the people who assessed outcomes of the intervention were blinded, therefore potential for detection bias. High risk of bias in the study, as there is a plausible bias that seriously weakens confidence in the results. The sites did not have identical hardware, therefore the intervention is potentially different in setting. The possibility of the Hawthorn effect for those receiving training was not controlled for. **Applicability:** High risk of bias in the study. Intervention likely to be limited to congregate living facilities in USA

Study Details	Intervention and population details	Analyses	Results	Comments
White et al (1999) Controlled non-randomised trial - **Objective**: To evaluate the impact of Internet and E-mail use on psychosocial well-being. **Recruitment:** A 1-hour informational session on the basics of computers and the Internet was held at the retirement community to generate interest in the project. Volunteers were recruited. **Setting**: Retirement community **Country:** North Carolina, USA **Funding Source**: Initiated by the Duke Institute for Learning in Retirement. Additional funding from the National Institute of Health, The National Institute of Aging Claude D. Pepper Older Americans Independence Centre Grant No. 5 P60 AG 11268.	24 hour a day access to 3 Macintosh Performa computers. Nine hours of instruction by a computer consultant, in groups of six with two participants sharing each computer. Instruction included: basic training in computer use, such as how to log on, manipulation of the mouse and file management; an introduction to the use of Email and the Internet; basic instruction in word processing. A help desk staffed by college and high school students assisted the participants at scheduled times throughout the study. **Providers/Deliverers:** Computer consultant and college/high school students. **Length**: Not stated for training. For help: average amount of time help staff available varied over the 5 months. Initially 3-4 hours/week for the first 2 months, decreasing to 1 hour/week for the last 3 months. **Duration**: 5 months **Intensity:** n/a **Comparator:** no training Measures taken at baseline, time 2 (2 weeks post training) and time 3 (5 months post training). **Population details** **Inclusion**: Living in the retirement community **Exclusion** none **Unit of allocation**: individual and organisation **Total** n = 27 **Intervention**: n = 19 **Comparator** n = 8 **Gender**: Intervention group: 16% Male, 84% Female. Control group: 25% Male, 75% Female. **Mean age (range):** Intervention group: M=77 (s.d. 7) years. Control group: M=80 (s.d. 8) years **SES:** none stated	**Baseline comparability:** There were no significant differences between the intervention and comparison groups with regard to age, gender, or education. There were no statistically significant differences between the two groups on the 8 subscales of the SF36. **Attrition** 4 (21%) dropped out of invention group. **Reasons for non-completion** 2before intervention because of health-related problems; 2 after training for practical reasons. **Process details** **Data collection by** interview **Statistical methods** Intervention and comparison group differences on baseline variables were determined using Wilcoxon Rank Sums Tests. Change scores were calculated for the outcome measure in the intervention group by determining the difference between T1 and T2 measurements and T1 and T3 measurements. Wilcoxon Signed-Rank Tests were used to determine if members of the intervention group changed significantly between T1 and T2. Wilcoxon Rank Sums Tests were used to identify significant differences in change scores between the intervention and comparison groups at T3. **Unit of analysis:** Individual **Unit of allocation:** individual & group **Time to follow up**: T2 = 2 weeks post training T3 = immediately after study **Mental well-being measure(s):** Affect Balance Scale (Bradburn 1969) **Power calculation**: None	There was no change in the Bradburn Affect Balance Scale between T1 and T2 or T1 and T3. Change scores for the intervention group = 0.1, sd=1.3, change scores for control group =-0.4, sd=1.7. **Adverse effects:** none	Authors state that the lack of change in Bradburn Affect Balance Scale is due to high scores at baseline and a 'ceiling effect'. Because participants were living in a retirement community they experience a high level of social support - and thus scored highly on the outcome measure. The participants reported a high educational level, which may have influenced their ability and willingness to learn to use this new technology and limits the generalisability of the results. **Applicability:** Likely to be limited to congregate living facility in the USA, and well-educated older people

<table>
<tr><th>Study Details</th><th>Intervention and population details</th><th>Analyses</th><th>Results</th><th>Comments</th></tr>
<tr>
<td>Wikstrom et al. (1993)

Controlled non-randomised trial -

Objective:
Will visual stimulation in this design be a tool to revitalise and improve emotional state and health status in a group of elderly women?

Recruitment:
The study was conducted in a single senior citizen apartment building. The subjects who met the inclusion criteria were contact by letter. There is no information as to how they were assessed for inclusion.

Setting:
At home

Country:
Sweden

Funding Source:
The PKF Foundation, Gothenburg, Sweden</td>
<td>The intervention involved looking at four sets of art to determine aesthetic reactions to and perception of art tendencies. The first set contained 8 works of art by well-known artists. Two are chosen to be acceptable by the subjects. The second set consists of 10 patterns, the third consists of three figures in white and black, and the fourth consists of 18 photographs. The research leader and the participant observed the art and a discussion ensued. The work of art is supposed to help the subject to visualise their thoughts and experiences.

Providers/Deliverers:
Research leader

Length: 1 hour

Duration: 4 months

Intensity: once a week

Comparator: The control group discussed current topics in the media, and their own hobbies and interests.

<u>Population details</u>
Inclusion: Female aged 70+, living alone in sheltered housing, were cognitively intact, able to read a newspaper with adequate spectacles and good lighting.
Exclusion none reported
Unit of allocation: individual and group

Total n = 40
Intervention: n = 20
Comparator n = 20
Gender: 100% female
Mean age (range): 70-97 (mean age=82.6)

SES: none reported</td>
<td>Baseline comparability:
Balanced by age, emotional and physical status, medication and blood pressure.

<u>Attrition</u>
Number of participants completing study
79

Reasons for non-completion
death

<u>Process details</u>
Data collection methods
Self-report

Statistical methods
ANOVA

Unit of analysis group

Unit of allocation: individual and group

Time to follow up:
12 months in total: Followed twice at 4 months and 8 months.

Mental well-being measure(s):
The Frame of Mind Test (appears to be unvalidated, and no source reference is provided).
Power calculation:
None</td>
<td>No effect sizes reported. No standard deviations are reported with the means.

The 2 tables below present the means before (A) and following 4 months (B) of activity and 4 months after (C) the activity period.
IV group
<table>
<tr><th></th><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Happy</td><td>0.75</td><td>1.52</td><td>1.72</td></tr>
<tr><td>Satisfied</td><td>0.85</td><td>1.02</td><td>1.35</td></tr>
<tr><td>Fortunate</td><td>0.37</td><td>0.55</td><td>0.53</td></tr>
<tr><td>Peaceful</td><td>0.57</td><td>0.92</td><td>1.27</td></tr>
<tr><td>Relaxed</td><td>0.66</td><td>0.64</td><td>0.49</td></tr>
<tr><td>Calm</td><td>0.88</td><td>1.17</td><td>1.08</td></tr>
<tr><td>Unhappy</td><td>0.74</td><td>0.42</td><td>0.26</td></tr>
<tr><td>Sad</td><td>0.57</td><td>0.64</td><td>0.28</td></tr>
<tr><td>Low spirited</td><td>0.55</td><td>0.40</td><td>0.35</td></tr>
<tr><td>Nervous</td><td>0.48</td><td>0.42</td><td>0.17</td></tr>
<tr><td>Restless</td><td>0.61</td><td>0.43</td><td>0.28</td></tr>
<tr><td>Dissatisfied</td><td>0.30</td><td>0.28</td><td>0.14</td></tr>
<tr><td>Anxious</td><td>0.54</td><td>0.43</td><td>0.33</td></tr>
</table>
Control Group
<table>
<tr><th></th><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Happy</td><td>0.93</td><td>0.84</td><td>0.52</td></tr>
<tr><td>Satisfied</td><td>0.99</td><td>0.93</td><td>0.80</td></tr>
<tr><td>Fortunate</td><td>0.60</td><td>0.45</td><td>0.34</td></tr>
<tr><td>Peaceful</td><td>0.61</td><td>0.53</td><td>0.60</td></tr>
<tr><td>Relaxed</td><td>0.54</td><td>0.32</td><td>0.47</td></tr>
<tr><td>Calm</td><td>1.17</td><td>0.97</td><td>0.82</td></tr>
<tr><td>Unhappy</td><td>1.16</td><td>1.70</td><td>1.30</td></tr>
<tr><td>Sad</td><td>1.05</td><td>1.29</td><td>1.59</td></tr>
<tr><td>Low spirited</td><td>0.75</td><td>0.90</td><td>1.08</td></tr>
<tr><td>Nervous</td><td>0.85</td><td>0.80</td><td>0.65</td></tr>
<tr><td>Restless</td><td>0.78</td><td>1.00</td><td>0.92</td></tr>
<tr><td>Dissatisfied</td><td>0.50</td><td>0.59</td><td>0.79</td></tr>
<tr><td>Anxious</td><td>0.97</td><td>0.84</td><td>0.76</td></tr>
</table>
All differences significant, many very significant

Adverse effects: none</td>
<td>The lack of clarity around concealment suggests that the participants may be aware of the intervention.

Unclear about blinding of assessment or participants.

No description of the randomisation procedure.

The paper is difficult to follow in places due to poor reporting which made quality assessment difficult.

The authors have performed multiple ANOVAs with no covariates

Applicability:
The methodological limitations means that it is difficult to ascertain applicability to the UK.</td>
</tr>
</table>

Study Details	Intervention and population details	Analyses	Results	Comments
Willcock (2006b). Qualitative + **Objective:** Evaluate a project to develop skills and confidence for independent living after being re-housed in permanent accommodation after homelessness. **Recruitment:** 227 people taking part in the intervention, 100 took part in the research, participating in interviews and/or completing questionnaires. **Setting:** 2 day centres in London. **Country:** London, UK. **Funding Source:** Help the Aged project, with support and assistance from St. Botolph's Project and The Spires Centre.	The intervention is a programme of services delivered across two sites. The first is a day centre based programme of group activities for older people to improve independence and confidence. These include a discussion group, talks, music group, swimming, walking, German class, computer skills, social group, bingo and monthly outings. The second focussed on providing housing specific advice and training necessary for independent living such as home maintenance, setting up home, coping with the stress and challenges of moving, budgeting, communication and accessing leisure activities. **Providers/Deliverers:** Help the Aged. **Length:** 90 minutes. **Duration:** 5 weeks. **Intensity:** Twice a week. **Comparator:** No comparator. **Total:** 227 users, 106 regularly participated in the group activities. 100 took part in the research. Semi-structured interviews with 55 of the 100 about the activities. 93 of the 100 completed a questionnaire about what they hoped to achieve from the activity, and 64 of the 100 completed another questionnaire about what kinds of activities older people are interested in) **Gender:** 78% men and 22% women. (out of 100 participants). **Mean age (range):** 72% 50-59; 23% 60-69; 5% 70+ (for the 100 participants). **SES:** Not reported.	**Baseline comparability:** Intervention group only. **Attrition** **Number of participants completing study:** 100. **Reasons for non-completion:** Not relevant. Not reported. **Process details** **Data collection methods:** Interview and questionnaire. **Statistical methods:** Percentages and qualitative. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Immediately after the intervention. **Mental well-being measure(s):** Loneliness and comments in interview. **Power calculation:** Not relevant.	The qualitative analysis suggests that according to the reports of the clients and project staff, the group activities benefited the clients in a number of ways, including enhanced physical health and mobility, improved cognitive ability and memory, reducing anxiety, improved social and interpersonal skills, reducing social isolation, improved self-esteem, motivation and independence. Physical activities were reported by clients to enhance their health and well-being and self esteem, playing bingo or learning a language was good for memory, physical activity, music and outings reduced anxiety, the life skill groups and language classes were good for self esteem. Learning new skills and acquiring new knowledge (activities that were structured, goal orientated) were associated with a sense of mastery. **Adverse effects:** No, other than participants were sad when the intervention ended and would have liked to continue their participation.	Lacks some details in the reporting of the process of the evaluation, ethics procedure and analysis. The multidimensional aspect of the services provided by the centres make it difficult to determine which aspect of the service might have more effect on mental wellbeing than others, and which may not have any effect. **Applicability:** The study was conducted in the UK in London and the findings could be applicable to similar populations in other urban areas.

Study Details	Intervention and population details	Analyses	Results	Comments
Wilcock (2006a) Qualitative + **Objective:** To evaluate outcomes of 'Live Choices', a service for people aged 50 and over who had experienced homelessness and were isolated, to explore the benefits of activity for users and identify barriers to accessing activities and facilities, and how they might be overcome. **Recruitment:** 66 referrals had been made to the project. Of these 51 received regular support. All those people registered with the intervention on October 2004 were contacted via letter to consent to participate. 36 responded. **Setting:** Delivered through drop in centres. **Country:** London, UK **Funding Source:** Funded by £100,000 from Help the Aged and Zurich Financial Services. project staffed by St. Botolph's Project until March 2004 and then taken over by Thames Reach Bondway.	Described as a meaningful occupation service. It provides a holistic service response to help support older people return to an occupation and from there to gain skills and access other support services. It provides a gateway into housing, health and support services and a range of group activities and one-to-one emotional support. It provides encouragement, advocacy, information, assistance and group social activities (including a weekly cafe morning, newsletter group, cinema club, classic film club and day trips). **Providers/Deliverers:** Charity: first by St. Botolph's Project until March 2004 and then taken over by Thames Reach Bondway. **Length:** depended on how much the individual engaged with the service, and what work they gained. **Duration:** unlimited. **Intensity:** unlimited. **Comparator:** No comparator. **Population details** **Inclusion:** None, but the service targeted: a) older people who had experienced homelessness or were isolated and at risk of homelessness or had housing needs, b) those who may have had alcohol, mental health or substance misuse support needs, c) were not actively engaging in any activity and needed information, support or encouragement to access community facilities and to pursue specific meaningful occupation goals. **Exclusion:** None stated. **Unit of allocation:** Individual. **Total:** N=36 **Intervention:** **Comparator:** **Gender:** 83% male **Mean age (range):** 53% 50-59yrs; 33% 60-69; 8% 70+; 6% unknown **SES:** All homeless.	**Baseline comparability:** Only intervention group **Attrition** **Number of participants completing study:** N = 36. **Reasons for non-completion:** Not relevant **Process details** **Data collection methods:** Interview and focus group. Questionnaire of demographic information. **Statistical methods:** Qualitative analysis. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Snapshot October 2004, ongoing project. **Mental well-being measure(s):** No measure - qualitative	The clients report improvements in psychological health, and these benefits were also observed by the staff involved in the project. Clients appeared to be less withdrawn, more positive and increasingly sociable. Improvements were also noted in self-esteem, social inclusion, confidence (related to the gaining of new skills, such as writing, spelling, grammar and artwork). Staff and clients reported improvements in motivation to look after their own care and health. **Adverse effects:** None reported.	The analysis could have been more in-depth and included those people who did not stay engaged in the project. It should be noted that 44% of the clients are reported to have mental health problems or marked memory loss. However there are no details of how this was assessed. The exclusion criteria for this NICE review would exclude this group. Project in London, UK. **Applicability:** The study was conducted in the UK in London and could be applicable to similar homeless populations in other urban areas.

Study Details	Intervention and population details	Analyses	Results	Comments
Williams & Lord (1997). RCT + **Objective**: Does a 12 month programme of group exercise have beneficial effects on physiological and cognitive functioning and mood on older community dwelling women? **Recruitment:** Unclear. The sample was recruited from women who took part in the initial phase of the Randwick Falls and Fractures Study (1988-1991). For this piece of work the coded identification numbers were randomly assigned the exercise or control condition. **Setting**: Not reported **Country:** Not reported **Funding Source**: National Health and Medical Research Council of Australia.	The intervention is an existing community based exercise programme provided free of charge. Sessions of about an hour twice weekly for four 10-12 week periods, 42 weeks of exercise in all. 5 minute warm up, 35 minute conditioning, 15 minutes stretching, 5-10 minutes relaxation (cool down). **Providers/Deliverers:** 3 Instructors trained to provide the same programme. **Length**: About 1 hour per twice weekly session. **Duration**: Four 10-12 week periods, 42 weeks of exercise in all. **Intensity:** Not reported. **Comparator:** No organised activity for the control group. **Population details** **Inclusion**: Community dwelling, age 60 plus. Took part in the initial phase of the Randwick Falls and Fractures Study (1988-1991). **Exclusion:** Ill and/or immobile, in hospital, medical condition involving the neuromuscular, skeletal or cardiovascular system, little English, already attending exercise classes similar to the study. **Unit of allocation**: Individual **Total:** n = 197 at the start of the study. **Intervention**: n = 100 in IV group. **Comparator:** n = 97 in C group. **Gender**: 100% female **Mean age (range):** 60 plus **SES:** None reported	**Baseline comparability:** The baseline characteristics were very similar, with no significant differences evident between the groups. **Attrition** **Number of participants completing study:** n = 71 (75%). **Reasons for non-completion:** Death, stroke, injurious fall, medical conditions (arthritis, vertigo, leg laceration), moved from the study area, withdrew consent. **Process details** **Data collection methods:** Self-report questionnaires. **Statistical methods:** Descriptive statistics chi square tests and group t tests repeated measures MANOVA. Mann-Whitney U tests. Pearson Correlation Coefficients. **Unit of analysis:** Individual **Unit of allocation:** Individual. **Time to follow up**: End of trial. **Mental well-being measure(s):** Five subjective measures of well being (general fitness, general health, sociability mood and outlook) were taken at time 2 only, with participants being asked to compare how they felt now with how they felt before the trial. **Power calculation**: None presented. but sample size may be justified a posteriori by statistical significance	There were significant differences between the IC and control groups for all 5 self-reported subjective well being measures. Exerciser (n=71) general fitness M=4.1, S.D.=0.7; general health M=4.0, S.D.=0.8; sociability M=3.9, S.D.=0.8; mood M=3.8 S.D.=0.7, outlook M=4.1 S.D.=0.8. Controls (n=78) general fitness m=2.9, S.D.=0.6; general health M=3.0, S.D.=0.6; sociability M=3.0 S.D.=0.4; mood M=2.9 S.D.=.05; outlook M=3.0 S.D.=0.6 **Adverse effects:** None reported	Sample is more representative of the general population than previous studies which recruit ed highly motivated participants. Use of another control group involved in a group activity such as yoga is recommended for future research. The measures of well-being were assessed at time 2 only and although there are differences between the two groups, there is no baseline comparison to determine whether this difference existed prior to the intervention. **Applicability:** The study is compromised by methodological limitations. However similar programmes exist in the UK so the intervention is likely to be applicable.

Study Details	Intervention and population details	Analyses	Results	Comments
Williams et al. (2000). Before and after - **Objective:** To pilot test exercises aimed at helping participants improve or maintain their balance and mobility; and to examine the influence of balance and mobility training on self efficacy and general well-being **Recruitment:** 20 women were recruited from two senior residencies in North Carolina. There are no details of how many were initially approached and refused, etc. **Setting:** In participants own homes **Country:** North Carolina, USA **Funding Source:** Not reported	The exercises were 11 activity progressions, graded from less to increasingly more challenging. These targeted mobility and balance and the authors state as being light to moderate intensity. (They are yoga type balance/stretches). The participants initially received instruction at home, according to their own individual level of ability. They were given an illustrated notebook with exercise descriptions and were then expected to undertake the exercises alone. Participants were asked to maintain a record 'log sheets' of their sessions. The assistant contacted them once a week for advice and encouragement. **Providers/Deliverers:** Unclear. States 'an assistant visited the home'. **Length:** Not clear. Participants who completed the exercise intervention reported it took them on average 40 minutes to complete the exercises and log sheets. **Duration:** 8 weeks. **Intensity:** Graded activity progressions. **Comparator:** No exercise. **Population details** **Inclusion:** Free from cardiovascular, orthopaedic or other diseases. **Exclusion:** None stated. **Unit of allocation:** Individual. **Total:** n=20. **Intervention:** n = 14. **Comparator:** n = 6. **Gender:** All female. **Mean age (range):** m=83.2 years Ranged between 73-92 years. **SES:** Not stated.	**Baseline comparability:** The three groups did not differ on any measures at pre-test. **Attrition** **Number of participants completing study:** n=7 IV; n=6 controls. **Reasons for non-completion:** Health problems, preference for group exercise, exercises required more time than anticipated. **Process details** **Data collection methods:** Self report. **Statistical methods:** t-tests. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** Post test. **Mental well-being measure(s):** Diener SWLS. **Power calculation:** None presented.	There were no significant differences on pre test scores for those who dropped out, the exercise group and control. Because of the low numbers, the authors gave the intervention to the control group after the first exercise group had completed. This gave a total sample of n=12 for the exercise intervention. Pre-test group averages are not reported for the control group. Post test group average life satisfaction was not significant between exercise (n=7, m=24.7, sd=7.4) and control (n=6, m=26.0, sd=8.3). Pre and post test scores for life satisfaction for the combined intervention group are not significant for life satisfaction. **Adverse effects:** The log kept by the participants finds that several of them found the combination of exercises and record keeping difficult and confusing.	The authors make no reference to the low power of their study. They also fail to address the limitation of generalising these results to the older population. The authors suggest that the psychological measures used may not be sensitive enough to change. A strength was that it was home based. **Applicability:** The results can only be generalised to a small group of women who self selected from two senior centres in the USA.

Study Details	Intervention and population details	Analyses	Results	Comments
Wolinsky et al. (2006a) RCT - **Objective**: To test effectiveness of 3 ACTIVE cognitive interventions focusing on memory, reasoning or speed of processing in delaying clinically relevant decline in HRQoL over 24 months. **Recruitment:** From 6 sites. **Setting**: Not reported **Country:** USA. **Funding Sources**: National Institutes of Health; Hebrew Rehabilitation Centre for he Aged, Indiana University; School of Medicine, Johns Hopkins University; New England Research Institutes Pennsylvania State University; University of Alabama at Birmingham; Wayne State University.	The intervention is the Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) designed to improve cognitive abilities. Three cognitive interventions were used. 1) Reasoning training - this focussed on inductive reasoning (the ability to solve problems that follow a serial pattern and that manifest in executive functioning) 2) Memory training - this focused on verbal episodic memory, which deals with acquisition and retrieval of information acquired in particular place at a particular time 3) Speed-training - this focused on visual search and the ability to identify and locate visual information quickly in a divided attention format, with and without distraction. **Providers/Deliverers:** Not reported **Length**: 10 sessions, but duration not reported **Intensity:** N/A **Comparator:** Comparisons were made between intervention groups, and between intervention groups and control group **Population details** **Inclusion**: adults aged 65 years and over, living independent of formal care but at risk for loss of functional independence **Exclusion:** Cognitive impairment (MMSE score <23); poor vision (< 20/50); dependence in hygiene, bathing, or dressing; diagnosed Alzheimer's disease; history of stroke in previous 12 months; cancer with limited life expectancy; current chemotherapy or radiation treatment; communication problems; planned move from study site area; scheduling conflicts that would preclude participation; & prior involvement in similar studies. **Unit of allocation**: Individual **Total**: 2802 **Intervention**: Memory training n=453; Reasoning training n=447; Speed training n=448 **Comparator:** n=456 77% female = 77%; **mean age** = 73.4 years **SES:** Mean educational attainment = 13.6 years	**Baseline comparability:** There were no significant differences between intervention and control groups on age, gender, ethnicity, education MMSE, ADLs, IADLs, EPT, CES-D, Chronic conditions and SF-35 scale scores with the exception of role limitations, on which participant in the reasoning intervention averaged 4.3 points fewer than the grand mean. **Attrition** **Number of participants completing study** 2147 of 2802 (76.6%) **Reasons for non-completion** Death (12.2%), refusal to continue in the study at some point after baseline data collection (37.9%) and investigators' inability to locate participants (33.0%) at the 24-month follow-up. **Process details** **Data collection methods:** self-report **Statistical methods** Data were weighted for potential attrition bias. Multiple regression models initially regressed extensive decline in HRQoL on a set of dummy variables representing the three cognitive intervention groups in order to obtain the crude effect estimates. The covariates were then added into the model in order to obtain the independent effects of the three cognitive interventions. Descriptive statistics were used to look at mean changes from baseline to 24 month follow-up interview. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up**: 24 months **Mental well-being measures:** SF-36 mental health scale **Power calculation**: None reported	No significant differences in SF-36 mental health between the groups at 24 month follow up (Memory intervention (n=542) Mean change score = -0.9; Reasoning intervention (n=531) Mean change score = -0.0; Speed intervention (n=543) Mean change score = 1.1; Control group (n=531) Mean change score = -0.5; p=.096). There were no statistically significant differences in the proportion of each group who achieved clinically important declines (.i.e. 0.50 s.d.) on the SF-36 mental health scale (Memory intervention (n=542) 28.9%; Reasoning intervention (n=531) 27.3%; Speed intervention (n=543) 23.5%; Control group (n=531) 26.0%; p=.218). A statistically significant difference between mean total number of clinically important declines on all of the eight SF-36 scales was observed , with participants in the speed-training treatment group averaging about 0.3 fewer declines than their counterparts (Memory intervention (n=542) M=2.35; Reasoning intervention (n=531) M=2.39; Speed intervention (n=543) M=2.08; Control group (N=531) M=2.25; p=.044), and statistically significant extensive declines (Memory intervention (n=542) M=28.0; Reasoning intervention (n=531) M=26.7; Speed intervention (n=543) M=19.5; Control group (n=531) M=25.8; p=.006). **Adverse effects:** None reported	Subjects may not have been analysed in the groups to which they were assigned. The duration of the intervention was operationalised by the actual number of self-help groups that each participant attended. Those that only attended a few meetings were omitted which could bias the results in favour of the condition. Operationalising the intervention by the number of sessions assumes a degree of equivalency among meetings, which was not the case. Nor does it take into account the length of time between meetings when participants did not attend, and the effect this had on outcomes. No information given on whether the groups were balanced at baseline on other demographic or key characteristics. Participants were not recruited to be representative of the population at large, which limits external validity. The exclusion criteria for ACTIVE intentionally screened out individuals with extant functional or cognitive decline. Because of this, ACTIVE participants were likely more resilient at baseline and less likely to decline by the time of the 24-month follow-up than the average older adult. The speed of processing training intervention was successful in reducing extensive decline in overall HRQoL over the first 24 months of follow-up. However, the risk of bias in the study seriously weakens confidence in the results. **Applicability:** Older people across a broad range of settings, although participants were more lresilient at baseline than the general population.

Study Details	Intervention and population details	Analyses	Results	Comments
Wolinsky et al. (2006b) RCT - **Objective**: The purpose of this study is to determine if three ACTIVE cognitive intervetions (memory intervention, reasoning intervention, speed intervention) were effective in delaying extensive clinically relevant declines in HRQoL at 5 years post-training. **Recruitment:** Participants were recruited from 6 sites. Citation given in the paper for more detailed information on the recruitment strategies. **Setting**: Not reported **Country:** USA, 6 sites: Hebrew Rehabilitation Centre for he Aged, The Indiana University School of Medicine, the Johns Hopkins University, the New England Research Institutes, the Pennsylvania State University, The university of Alabama at Birmingham, and Wayne State University. **Funding Source**: National Institutes of Health	The intervention is the Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) designed to imporve cognitive abilities.Three cognitive interventions were used. 1) Reasoning training - this focussed on inductive reasoning (the ability to solve problems that follow a serial pattern and that manifest in executive functioning) 2) Memory training - this focused on verbal episodic memory, which deals with acquisition and retrieval of information acquired in particular place at a particular time 3) Speed-training - this focused on visual search and the ability to identify and locate visual information quickly in a divided attention format, with and without distraction. **Providers/Deliverers:** Researchers. **Length**: 10 sessions, but duration not reported. Session 1-5 focused on strategy instruction exercises, sessions 6-10 provided additional practice exercises but introduced no new exercises. **Duration**: Not reported **Intensity:** N/A **Comparator:** No treatment control group **Population details** **Inclusion**: adults over 65, independent of formal care but at risk for loss of functional independence **Exclusion:** Cognitive impairment (MMSE score <23); poor vision (Less than 20/50); dependence in hygiene, bathing, or dressing; diagnosed Alzheimer's disease; history of stroke in the previous 12 months; cancer with limited life expectancy; current chemotherapy or radiation treatment; communication problems; a planned move from the study site area; scheduling conflicts that would preclude participation in study activities; and prior involvement in similar studies. **Unit of allocation**: Individual **Totals**: n = 2802; Memory 542; Reasoning 531; Speed 543; **Comparator:** n=531 Female = 78%; **mean age** = 73 **SES:** Educational attainment M=13.6 years	**Baseline comparability:** Intervention groups were balanced at baseline. There were no significant differences between intervention and control groups on age, gender, ethnicity, MMSE, ADLs, IADLs, EPT, chronic conditions and SF-35 scale scores with the exception of role limitations and social function, and general health. In addition, slight differences (p=0.44) in depressive symptoms **Attrition** **Number of participants completing study** 1804 of 2802 (64%) **Reasons for non-completion** Death (12.2%), refusal to continue in the study at some point after baseline data collection (37.9%) and investigators' inability to locate participants (33.0%) at the 24-month follow-up. **Process details** **Data collection methods** Self-report **Statistical methods** after weighting the data to adjust for potential attrition bias, a simple intent-to-treat analysis was conducted. A multivariate regression model was estimated that included binary indicators for each of the three cognitive intervention arms. This regression model was estimated using HRQoL change data derived from both the 2- and 5-year post-training interviews, first for the more stringent definitional threshold used previously, and then for the less stringent definitional threshold. **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up**: 24 months & 5 years **Mental well-being measure(s):** SF-36 **Power calculation**: None	Proportion of participants at each number (0-8) of clinically relevant declines (defined as >0.50 SD) on the 8 SF-36 scales show clear decline in HRQoL by 2 years post-training & even more by 5 years. Extensive declines were defined as clinically relevant change of 4+ of the SF-36 scales between baseline and 2- or 5-year follow-up. Participants in the speed of processing intervention treatment were significantly protected from extensive declines in HRQoL at both 2 and 5 years post-training (adjusted odds ratios (AORs) = 0.617 and 0.744, p=.004 and .038 respectively) Participants in the memory and reasoning treament arm were not signficantly protected from extensive HRQol decline at either period. Likewise when extensive declines were defined as clinically relevant on change on three or more of the SF-36 scales between baseline and the 2- or 5- years follow-ups, the results show that participants in the speed of processing intervention treatment arm were significantly protected from extensive decline in HRQol at both 2 and 5 years post-training (AORs = 0.74 and 0.737, p=.033 and .022 respectively) and that the amount of risk reduction was virtually identical over time. Participants in the memory and reasoning treatment arms were not signficantly protected from extensive HRQoL decline at 2 years post-training, but were significantly protected from extensive HRQoL decline at 5 years post-training (AORs = 0.665 and 0.762, p=.002 and .041 respectively). **Adverse effects:** None	The study examines the effects of cognitive training over 5 years, which is a clear strength of the study. The results are important and show that at both 2 and 5 years, the speed of processing intervention provided significant protection against extensive declines in HRQOL. The paper does not give enough information about the methods of randomisation or concealment, thus potential for bias. Participants were not recruited to be representative of the population at large, which limits external validity. The exclusion criteria for ACTIVE intentionally screened out individuals with extant functional or cognitive decline. Because of this, ACTIVE participants were likely more resilient at baseline and less likely to decline by the time of the 24-month follow-up than the average older adult. **Applicability:** Likely to be applicable to the population of older people across a broad range of settings, although it is worth noting that the participants were more likely to be resilient at baseline than the general population.

Study Details	Intervention and population details	Analyses	Results	Comments
Yuen (2002). CBA- **Objective:** How effective is altruistic activity in improving the life satisfaction of residents in long term care (LTC) facilities? **Recruitment:** 20 residents from 4 LTC facilities were enrolled in the study.18 completed. **Setting:** LTC facilities (2 nursing homes and 2 assisted living facilities). **Country:** Florida, USA. **Funding Source:** Not reported	The intervention is described as altruistic activity designed to provide a meaningful role. The LTC resident is a mentor, paired with an English Second Language (ESL) student from the University of Florida, Gainesville. The ESL students volunteered to be conversation partners with residents in the LTC facilities. **Providers/Deliverers:** ESL students **Length:** One hour per week **Duration:** 3 consecutive weeks **Intensity:** N/A **Comparator:** Participants in the control group did not have a student to be mentored and participated in the usual social and recreational activities in the facilities. After the post-intervention evaluation they were offered the opportunity to mentor students if available **Population details** **Inclusion:** English as first language, ability to carry on a normal daily conversation for at least an hour, cognitively intact as dictated by a score of 24 or above on the MMSE **Exclusion:** Known maladaptive behaviour pattern, visual or hearing impairment that could not be corrected using assistive devices **Unit of allocation:** Individual. **Total:** N = 20 participants enrolled. **Intervention:** n = 10. **Comparator:** n = 10. **Gender:** Not reported. **Mean age (range):** IV - M = 82.2 +/- 12.9; C - M = 77.9 +/- 13.6. **SES:** Not reported.	**Baseline comparability:** Not addressed and it is unclear from the paper. **Attrition** **Number of participants completing study:** N = 18 participants completed (90%). **Reasons for non-completion:** One female in the control group had a fall, broke her ankle and was hospitalised for a few weeks. One male in the mentoring group moved out of the LTC facility to another location. **Process details** **Data collection methods:** Self report questionnaire with the questions read aloud by the researcher. **Statistical methods:** ANCOVA, paired t test. **Unit of analysis:** Individual. **Unit of allocation:** Individual. **Time to follow up:** One-and-a-half to 2 months after the first visit. **Mental well-being measure(s):** Life Satisfaction Index (LSI). **Power calculation:** Not reported.	LSI-A - Adjusted mean scores of the LSI-A at post-intervention for the mentoring group (m=14.9, sd=2.1) were significantly higher than that of the control group (m=10.8, sd=4.3; F1, 15) = 4.96, p = .0417). The mentoring group showed significant improvement over time (pre m=13.7, sd=2.6; post m=14.9, sd=2.1; t=1.98, p=.042), whereas the control group declined slightly (pre m=11.4, sd=4.5, post m=10.8, sd=4.3) but this was not significant. **Adverse effects:** None reported.	The reported significant improvement in life satisfaction must be taken with caution due to the methodological limitations. Weaknesses include failure to randomise participants into groups, small sample size for conducting parametric statistics and potential confounding variables. **Applicability:** Standard measure (LSI-A) used, but participant population not well defined. Applicability uncertain

Study Details	Intervention and population details	Analyses	Results	Comments
Zauszneiwski (1997). Quasi experimental pre-post test design - **Objective:** What are the effects of Learning Resourcefulness Training (LRT) on measures of learned resourcefulness, anxiety, depression, adaptive functioning, and life satisfaction in healthy older adults? **Recruitment:** Posted advertisements and personal contacts in 4 senior centres in 2 sections of an eastern mid-west city. Randomly selected from those who identified a need for an interest in the LRT intervention. **Setting:** Each of the 4 senior centres used by the participants. **Country:** City in Mid-western USA. **Funding Source:** Not reported.	The intervention consists of Learned Rsourcefulness Training (LRT). This is a cognitive behavioural repertoire of skills that are used to control the effects of disturbing thoughts, feelings and sensations on daily task performance. The intervention consists of attendance at six weekly 2 hour group sessions at the senior centre, preceded and followed by face-to-face interviews lasting about 30-45 minutes. Skills taught included coping strategies, problem solving, positive self-talk, priority setting and decision making. **Providers/Deliverers:** Master's prepared nurse clinician who was trained and supervised by the principal investigator. **Length:** 2 hours **Duration:** 6 weeks **Intensity:** 1 session per week **Comparator:** Placebo control groups participated in diversional activities. **Population details** **Inclusion:** Not reported. **Exclusion:** Not reported. **Unit of allocation:** Individual. **Total:** N = 37 **Intervention:** Not reported **Comparator:** Not reported **Gender:** 89% F: 11% M **Mean age (range):** 65-86, M = 75 **SES:** 57% report an annual income between $5,001 and $10,000; 22% reported incomes between $10,001 and $15,000.	**Baseline comparability:** Yes on age, gender, income, learned resourcefulness, anxiety, depression, adaptive functioning and life satisfaction; but not on race, education, marital status and living arrangements. These differences were related to the geographical location of the groups (east versus west side of the town) **Attrition** **Number of participants completing study:** N = 37 **Reasons for non-completion:** Not reported **Process details** **Data collection methods:** Interview post-intervention **Statistical methods:** Paired t tests **Unit of analysis:** Individual **Unit of allocation:** Individual **Time to follow up:** Post-intervention. **Mental well-being measure(s):** Life satisfaction index (LSI) 20 items. **Power calculation:** Not reported.	There was a significant improvement in life satisfaction scores for both intervention groups (time 1 m=27.75, time 2 m=30.85; t = 4.25, P < .001) and no significant change for the placebo groups time 1 m=28.29, time 2 m=28.12; (t = -0.17, P < .865). No standard deviations are reported. **Adverse effects:** None reported	Weaknesses - the results must be cautiously interpreted given the small sample size, the convenience sampling method and the moderately high resourcefulness scores prior to the intervention. Standard population and standard, valid outcome measures **Applicability:** The methodological weaknesses limit any generalisability. The intervention has good face validity but the applicability to the UK is uncertain.