NHS
National Institute for Health and Clinical Excellence

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Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community-based exercise programmes for walking and cycling

Public Health Intervention Guidance no. 2

Foreword

The Department of Health (DH) asked the National Institute for Health and Clinical Excellence (NICE or the Institute) to produce guidance on four common methods used to increase the population's physical activity levels. The four interventions considered are: brief interventions in primary care, exercise referral schemes, pedometers and community-based walking and cycling programmes.

The Public Health Interventions Advisory Committee (PHIAC) considered the reviews of the evidence and an economic appraisal before developing these recommendations. The recommendations take into account the Chief Medical Officer for England's (CMO's) recommendation that adults should achieve at least 30 minutes moderate activity on five or more days of the week[1].

NICE fully endorses the importance of physical activity as a means of promoting good health and preventing disease, and the consequent need to develop comprehensive, multi-sectoral strategies (including innovative approaches) to promote physical activity as part of daily life[2]. NICE also acknowledges that physical activity has a range of benefits beyond direct health outcomes, such as contributing to community cohesion and addressing the needs of vulnerable groups and communities.

This guidance examines only a small number of possible approaches to increasing individual activity levels. The broader environmental and organisational changes needed are the subject of future programme guidance being developed by NICE. See the Institute's website for more details at: www.nice.org.uk/page.aspx?o=PhysicalActivityandEnv.

[1] Department of Health (2004) *At least five a week: Evidence on the impact of physical activity and its relationship to health*. London: Department of Health.
[2] Including walking, cycling, gardening, household activities and recreational activities.

Contents

1 Recommendations

This document constitutes the Institute's formal guidance on brief interventions in primary care, pedometers, exercise referral schemes and community-based exercise programmes for walking and cycling to increase physical activity.

The recommendations in this section are presented without any reference to evidence statements. Appendix A repeats all the recommendations and lists their linked evidence statements.

PHIAC (see appendix C) considered the evidence of effectiveness and cost effectiveness, and comments from stakeholders and service users.

The methods used to develop the guidance are summarised in appendix D. Details of supporting documents are given in appendix E.

1.1 Brief interventions in primary care

Brief interventions involve opportunistic advice, discussion, negotiation or encouragement. They are commonly used in many areas of health promotion, and are delivered by a range of primary and community care professionals. The interventions vary from basic advice to more extended, individually-focused attempts to identify and change factors that influence activity levels. PHIAC determined there is sufficient evidence to recommend the use of brief interventions in primary care.

Recommendation 1

Primary care practitioners should take the opportunity, whenever possible, to identify inactive adults and advise them to aim for 30 minutes of moderate activity on 5 days of the week (or more)[3]. They should use their judgement to determine when this would be inappropriate (for example, because of medical conditions or personal circumstances). They should use a validated tool, such

[3]The practitioner may be a GP or another professional with specific responsibility for providing encouragement or advice. This will depend on local conditions, professional interest and resources. Health trainers are likely to have a role in offering brief advice. 'Inactive' is used as shorthand for those failing to reach the CMO's recommendation. 'Advise' is used as shorthand for 'encourage, advise, discuss, negotiate' – see definition of brief interventions.

as the Department of Health's forthcoming general practitioner physical activity questionnaire (GPPAQ), to identify inactive individuals.

Recommendation 2

When providing physical activity advice, primary care practitioners should take into account the individual's needs, preferences and circumstances. They should agree goals with them. They should also provide written information about the benefits of activity and the local opportunities to be active. They should follow them up at appropriate intervals over a 3 to 6 month period.

Recommendation 3

Local policy makers, commissioners and managers, together with primary care practitioners, should monitor the effectiveness of local strategies and systems to promote physical activity. They should focus, in particular, on whether or not opportunistic advice is helping to increase the physical activity levels of people from disadvantaged groups, including those with disabilities (and thereby tackling health inequalities). They should also assess how effective professionals from a range of disciplines are at raising long-term physical activity levels among these groups.

Recommendation 4

Local policy makers, commissioners and managers, together with primary care practitioners, should pay particular attention to the needs of hard to reach and disadvantaged communities, including minority ethnic groups, when developing service infrastructures to promote physical activity.

1.2 Exercise referral schemes

An exercise referral scheme directs someone to a service offering an assessment of need, development of a tailored physical activity programme, monitoring of progress and a follow-up. The Fitness Industry Association estimates that there are around 600 schemes in England. They involve participation by a number of professionals and may require the individual to go to an exercise facility such as a leisure centre.

PHIAC determined that there was insufficient evidence to recommend the use of exercise referral schemes to promote physical activity, other than as part of research studies where their effectiveness can be evaluated.

Recommendation 5

Practitioners, policy makers and commissioners should only endorse exercise referral schemes to promote physical activity that are part of a properly designed and controlled research study to determine effectiveness[4]. Measures should include intermediate outcomes such as knowledge, attitudes and skills, as well as measures of physical activity levels. Individuals should only be referred to schemes that are part of such a study.

1.3 Pedometers, walking and cycling schemes

Pedometers are a common aid to increasing physical activity through walking. Much of the research about pedometers has involved comparing the validity and reliability of different models. This guidance focuses on how effective they are at increasing people's physical activity levels.

In the context of this guidance, walking and cycling schemes are defined as organised walks or rides. Public health practitioners have increasingly become involved in these types of project in recent years.

PHIAC determined that there was insufficient evidence to recommend the use of pedometers and walking and cycling schemes to promote physical activity, other than as part of research studies where effectiveness can be evaluated. However, professionals should continue to promote walking and cycling (along with other forms of physical activity[5]) as a means of incorporating regular physical activity into people's daily lives (see Recommendation 1).

Recommendation 6

Practitioners, policy makers and commissioners should only endorse pedometers and walking and cycling schemes to promote physical activity that are part of a properly designed and controlled research study to determine

[4] For further information, see the implementation advice that accompanies this guidance (available from April at: www.nice.org.uk/PHI002).
[5] Other activities could include gardening, household activities and recreational activities.

effectiveness[6]. Measures should include intermediate outcomes such as knowledge, attitude and skills, as well as measures of physical activity levels.

[6] For further information, see the implementation advice that accompanies this guidance (available from April at: www.nice.org.uk/PHI002).

2 Public health need and practice

2.1 What is the overall aim of the guidance?

This guidance aims to help practitioners deliver effective interventions that will increase people's physical activity levels and therefore benefit their health. It examines: brief interventions in primary care, exercise referral schemes, pedometers, and community-based cycling and walking schemes.

2.2 Why is it being produced?

The CMO's report 'At least five times a week[7]' made a clear link between physical inactivity and ill health. Physical activity can help prevent and manage over 20 conditions and diseases including coronary heart disease, stroke, diabetes and cancer. It also promotes mental well-being and helps people to manage their weight.

According to current recommendations, adults should be at least moderately active for at least 30 minutes, at least 5 days a week. Recent estimates suggest that around 6 out of 10 men and 7 out of 10 women are not active enough to benefit their health[8]. Activity levels vary with age, gender, class and ethnicity.

Fifty three per cent of men aged 16–24 achieved the recommended activity levels, compared with 8% of men aged 75 and over. Among women, 29–31% aged 16–54 reached the recommended level. However, the same was only true of 3% of women aged 75 and over.

'The health of minority ethnic groups' survey[9]' measured participation in physical activity among the main minority ethnic groups in England. Compared with the general population, it found that South Asian and Chinese men and women were much less likely to participate in physical activity – of any kind (whether it was sport and exercise, walking, heavy housework or

[7] Department of Health (2004) *At least five a week: evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer.* London: Department of Health.
[8] Joint Health Surveys Unit (2003) *Health survey for England 2003*. London: The Stationery Office.
[9] Joint Health Surveys Unit (1999) *Health survey for England: health of minority ethnic groups 1999.* London: The Stationery Office.

DIY). Bangladeshi men and women were the most inactive – they were almost twice as likely as the general population to be classified as sedentary.

Relatively little is known about trends in physical activity over recent decades. 'The health survey for England[10]' analysed trends between surveys in 1997, 1998 and 2003. It did not find an overall trend, although there were some increases in the proportion of older people meeting the recommended activity levels. Transport survey data show that the average distance walked by adults annually has fallen: from 255 miles in 1975/6 to 192 miles in 2003. Bicycle mileage for the same years fell from 51 to 34 miles per year[11].

Physical activity is an important factor in a number of government Public Service Agreements targets. These include targets to tackle obesity, to increase cultural and sporting opportunities and to improve the quality of the built environment.

There is a clear need for action in a variety of settings. 'Choosing activity[12]' emphasised the need for a cultural shift to increase levels of physical activity and involves a cross-government commitment to getting people more active.

Primary care has a well established role in preventing and managing coronary heart disease and other conditions related to physical inactivity, such as diabetes. This is acknowledged as important in the new General Medical Services (GMS) contract (the Quality and Outcomes Framework (QOF)).

2.3 Who is it for?

The guidance is aimed at professionals working in the NHS, local authorities and the voluntary sector who have either a direct or indirect role and/or responsibility for physical activity or health improvement more generally. Within the NHS, this includes: directors of public health, public health advisers, commissioners of services, general practitioners (GPs), other

[10] Primatesta P (2004) *Health survey for England 2004 – updating of trend tables to include 2004 data*. London: The Stationery Office.
[11] Office of National Statistics (2003) *National travel survey: 2003 final results*. London: The Stationery Office.
[12] Department of Health (2005) *Choosing activity: A physical activity action plan*. London: Department of Health.

primary healthcare professionals (for example, health visitors, midwives, community nurses, nurse practitioners, physiotherapists, chronic disease nurses, pharmacists, health care assistants and health trainers). In local authorities it includes: those working in Healthy Living Centres, leisure service managers, walking and cycling officers, exercise and leisure professionals and community development workers. In the voluntary sector it includes: those developing and delivering walking or cycling schemes or pedometer loan schemes.

The recommendations are aimed at practitioners who are directly involved with local communities. They are also aimed at those who develop and commission programmes and services, particularly within the context of Local Strategic Partnerships and associated partnership forums. This includes directors of public health and other senior managers within primary care trusts (PCTs), as well as chief officers within local authorities.

3 Implementation

The Healthcare Commission assesses the performance of NHS organisations in meeting core and developmental standards set by the DH in 'Standards for better health' issued in July 2004. The implementation of NICE public health guidance will help organisations meet the standards in the public health (seventh) domain, such as core standards C22 and C23 and developmental standard D13.

NICE has developed tools to help organisations implement this guidance (listed below). These will be available on our website (www.nice.org.uk/PHI002) in April 2006.

- Costing tools:
  - Costing report to estimate the national savings and costs associated with implementation
  - Costing template to estimate the local costs and savings involved.
- Implementation advice on how to put the guidance into practice and national initiatives which support this locally.
- Audit criteria to monitor local practice.

4 Background

The processes and methods NICE uses to develop public health guidance are set out in the following documents, which are available from the NICE website at: www.nice.org.uk

- 'Methods for development of NICE public health guidance' (NICE 2006).
- 'The public health guidance development process: An overview for stakeholders including public health practitioners, policy makers and the public' (NICE 2006).

The assessment of evidence used to develop this guidance was based on the following:

- 'Guideline development methods' (NICE 2005)

A quick reference guide (QRG) for professionals whose remit includes public health and for interested members of the public is also available from the NICE website (www.nice.org.uk/PHI002quickrefguide) or from the NHS Response Line (0870 1555 455 – quote reference number N1015).

5 Recommendations for research

PHIAC considered that research funding agencies should establish a nationally coordinated programme to evaluate the most effective and cost effective ways of using primary care as a means of increasing physical activity levels.

An immediate priority is to establish the best validated measure(s) to assess baseline and subsequent changes in physical activity levels, following an intervention. A basic minimum data set also needs to be established to assess levels of physical activity in the population. This might include related physiological and psychological measures.

The Committee recommended that the following research questions should be addressed.

1. What interventions are most effective and cost effective in increasing physical activity levels among people in lower socioeconomic and high risk groups?

2. What factors influence the effectiveness and cost effectiveness of brief physical activity advice aimed at inactive adults? (For example, what are the key attributes of different professionals?)

3. What factors influence how effective and cost effective pedometer, walking and cycling schemes are at helping inactive adults to become more physically active?

4. What is the effectiveness and cost effectiveness of exercise referral schemes on the long-term (over 1 year) physical activity levels of previously inactive adults?

In addition, the DH should fund research to address the following question:

5. What is the effectiveness and cost effectiveness of the DH/Countryside Agency national pedometer programme on the long-term (over 1 year) physical activity levels of previously inactive adults?

These research questions relate to the four interventions covered by this guidance. However, it is important to recognise that this does not mean that they are the only priorities for research in relation to the promotion of physical activity as a whole.

More detail on the evidence gaps identified during the development of this guidance is provided in appendix B.

6 Review

In March 2009 this guidance will be reviewed and the state of the evidence base at that time will be reassessed. A decision will then be made about whether it is appropriate to update the guidance. If it is not updated at that time, the situation will be reviewed again in March 2011.

7 Related guidance

Published

- Hypertension: management of hypertension in adults in primary care. *NICE clinical guideline* no. 18 (2004). Available from: www.nice.org.uk/CG018
- Falls: the assessment and prevention of falls in older people. *NICE clinical guideline* no. 21 (2004). Available from: www.nice.org.uk/CG021
- Depression: management of depression in primary and secondary care *NICE clinical guideline* no. 23 (2004). Available from: www.nice.org.uk/CG023

Under development

- Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children (NICE clinical guideline). Further information can be found at: www.nice.org.uk/page.aspx?o=Obesity
- Guidance on physical activity and the wider environment (NICE public health programme guidance). Further information can be found at: www.nice.org.uk/page.aspx?o=PhysicalActivityandEnv

8 Acknowledgements

This guidance was developed by PHIAC supported by the NICE Project Team. For details of PHIAC membership see appendix C.

The NICE Project Team comprised:

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Health Economics Adviser.

NICE is grateful for the input of its Public Health Collaborating Centre for Physical Activity[13], which carried out the reviews of the evidence of effectiveness, and Matrix Research and Consultancy, which carried out the economic appraisal. The authors of the reviews of effectiveness were: Charlie Foster, Nick Cavill and Somen Banerjee (University of Oxford) and Fiona Bull, Kim Buxton, Ruth Carr and Catherine Simkin (Loughborough University). The economic appraisal was undertaken by Kevin Marsh and Andrew Beale.

NICE would also like to thank the stakeholders who commented on the scope, the evidence base and the draft recommendations, including those who submitted evidence.

[13] The Collaborating Centre is an alliance between the British Heart Foundation Health Promotion Research Group (University of Oxford) and the British Heart Foundation National Centre for Physical Activity and Health (Loughborough University).

Appendix A: recommendations for policy and practice and supporting evidence statements

This appendix sets out the recommendations and the associated evidence statements taken from four reviews of effectiveness (see appendix D for the key to study types and quality assessments). Effectiveness was examined over three timescales:

- in the short term (6–12 weeks)
- in the longer term (over 12 weeks)
- over a very long timeframe (for example, over 1 year).

Recommendations are followed by the evidence statements that underpin them. For example: [**evidence statement BI.1**] indicates that the linked statement is numbered 1 in the brief interventions [**BI**] review and **P.1** indicates that it is numbered 1 in the pedometer [**P**] review (**WC** and **ER** refer to the walking and cycling and exercise referral reviews respectively). The reviews are available on the NICE website (www.nice.org.uk/page.aspx?o=PhysicalActivityMain). Where a recommendation is not directly taken from the evidence statements, but is inferred from the evidence, this is indicated by **IDE** (inference derived from the evidence).

Brief interventions in primary care: Recommendations

Brief interventions involving opportunistic advice, discussion, negotiation or encouragement are common in many areas of health promotion, including physical activity promotion. These interventions vary from basic advice to increase activity to more extended, individually-focused attempts to identify and change factors influencing levels of activity, and are delivered by a wide variety of primary care professionals. PHIAC determined there is sufficient evidence to recommend the use of brief interventions in primary care.

Recommendation 1

Primary care practitioners should take the opportunity, whenever possible, to identify inactive adults and advise them to aim for 30 minutes of moderate

activity on 5 days of the week (or more)[14]. They should use their judgement to determine when this would be inappropriate (for example, because of medical conditions or personal circumstances). They should use a validated tool, such as the Department of Health's forthcoming general practitioner physical activity questionnaire (GPPAQ), to identify inactive individuals.
(Evidence statements BI.1, BI.2c, IDE)

Recommendation 2

When providing physical activity advice, primary care practitioners should take into account the individual's needs, preferences and circumstances. They should agree goals with them. They should also provide written information about the benefits of activity and the local opportunities to be active. They should follow them up at appropriate intervals over a 3 to 6 month period.
(Evidence statements BI.2a, BI.2b)

Recommendation 3

Local policy makers, commissioners and managers, together with primary care practitioners, should monitor the effectiveness of local strategies and systems to promote physical activity. They should focus, in particular, on whether or not opportunistic advice is helping to increase the physical activity levels of people from disadvantaged groups, including those with disabilities (and thereby tackling health inequalities). They should also assess how effective professionals from a range of disciplines are at raising long-term physical activity levels among these groups.
(IDE)

[14]The practitioner may be a GP or another professional with specific responsibility for providing encouragement or advice. This will depend on local conditions, professional interest and resources. Health trainers are likely to have a role in offering brief advice. 'Inactive' is used as shorthand for those failing to reach the CMO's recommendation. 'Advise' is used as shorthand for 'encourage, advise, discuss, negotiate' – see definition of brief interventions.

Recommendation 4

Local policy makers, commissioners and managers, together with primary care practitioners, should pay particular attention to the cultural needs of hard to reach and disadvantaged communities, including minority ethnic groups, when developing service infrastructures to promote physical activity.
(IDE)

Exercise referral schemes: Recommendations

An exercise referral scheme directs someone to a service for an assessment of need, the development of a tailored physical activity programme, monitoring of progress and a follow-up. The Fitness Industry Association estimates that there are around 600 such schemes in England. They involve participation by a number of professionals and may require the individual to go to an 'exercise facility' such as a leisure centre.

PHIAC determined that there was insufficient evidence to recommend the use of exercise referral schemes to promote physical activity other than as part of research studies where their effectiveness can be evaluated.

Recommendation 5

Practitioners, policy makers and commissioners should only endorse exercise referral schemes to promote physical activity that are part of a properly designed and controlled research study to determine effectiveness[15]. Measures should include intermediate outcomes such as knowledge, attitudes and skills, as well as measures of physical activity levels. Individuals should only be referred to schemes that are part of such a study.
(Evidence statements ER.1, ER.2)

Pedometers, walking and cycling schemes: Recommendations

Pedometers are a common aid to increasing physical activity through walking. To date, much of the research about pedometers has involved comparing the

[15] For further information see the implementation advice that accompanies this guidance.

validity and reliability of different models. However, this guidance focuses on their effectiveness in increasing people's physical activity levels.

In the context of this guidance, walking and cycling schemes are defined as organised walks or rides. Public health practitioners have increasingly become involved in these types of project in recent years.

PHIAC determined that there was insufficient evidence to recommend the use of pedometers and walking and cycling schemes to promote physical activity other than as part of research studies where their effectiveness can be evaluated. However, professionals should continue to promote walking and cycling (along with other forms of physical activity[16]) as a means of incorporating regular physical activity into people's daily lives (see recommendation 1).

Recommendation 6

Practitioners, policy makers and commissioners should only endorse pedometers and walking and cycling schemes to promote physical activity that are part of a properly designed and controlled research study to determine effectiveness[17]. Measures should include intermediate outcomes such as knowledge, attitude and skills, as well as measures of physical activity levels. **(Evidence statement P.1, WC.1, WC.2)**

Brief Interventions: Evidence statements

BI.1

There is evidence from controlled trials that brief interventions in primary care can be effective in producing moderate increases in physical activity in middle aged and older populations in the short term (two [1+] studies, one [1-] study), in the longer term (one [1++], one [2-] study and one [1-] study) and in the very long term (two [1++] studies and one [1-] study). The findings are potentially applicable to the UK, assuming appropriate adaptation. However, for the effect to be sustained at one year, the evidence suggests that several

[16] Other activities could include gardening, household activities and recreational activities.
[17] For further information see the implementation advice that accompanies this guidance.

follow-up sessions over a period of 3 to 6 months are required after the initial consultation episode.

BI.2

The evidence suggests that:

a) a ‘written prescription’ outlining physical activity goals and/or step testing during the consultation may be a useful adjunct to verbal advice to increase physical activity

b) follow-up over an appropriate time period appears to be more important than the length of individual sessions

c) interventions aimed at older groups seem more effective. However, these were also studies which involved follow-up and it is therefore difficult to arrive at firm conclusions about whether this effect was linked to the age of the population or the design of the intervention.

BI.3

There was insufficient evidence to identify important effects from:

a) differences between the ways that interventions tailored materials to individuals (or used standard materials)

b) the job title/position of the deliverer of the intervention

c) the setting of the delivery of the intervention (e.g. in a primary care setting or a local leisure centre).

Pedometers: Evidence statements

P.1

The evidence from four (-) quality randomised controlled trials involving different target groups for the effectiveness of pedometer-based interventions aimed at increasing physical activity levels in the adult population is equivocal in both the short and longer term. No evidence was found which examined

effectiveness over one year (the longest follow-up in the included studies was at 24 weeks)**.**

Exercise referral: Evidence statements

ER.1

The evidence from two randomised controlled trials (1-) suggests that exercise referral schemes, involving a referral, either from or within primary care, can have positive effects on physical activity levels in the short term (6 to 12 weeks).

ER.2

However, evidence from four trials (one [1++], three [1-]) indicates that such referral schemes are ineffective in increasing physical activity levels in the longer term (over 12 weeks) or over a very long timeframe (over 1 year).

Organised walking and cycling schemes: Evidence statements

WC.1

The evidence from four primary studies (two individual RCTs [one 1++, one 1-]) 1 cluster RCT (1++), one delayed intervention study (2-) for the effectiveness of community-based walking programmes in increasing physical activity is equivocal. The findings are applicable to similar interventions in the UK.

WC.2

There is no evidence about the effectiveness of community-based cycling programmes using a controlled research design. Evaluation reports from the grey literature show that these programmes are popular and well received by participants, but there is little concrete evidence of their impact on levels of cycling.

Cost-effectiveness evidence for brief interventions in primary care

A cost-effectiveness analysis was carried out for brief interventions in primary care, following the reviews of effectiveness and cost effectiveness (see appendices D and E for details).

When comparing the intervention with no intervention, the incremental cost per quality-adjusted life year (QALY) gained is estimated to range from around £20 to around £440.

When including the healthcare savings from preventing disease and other conditions, all the brief interventions result in net cost savings to the health service compared with no intervention. They also result in a better quality of life for participants. The incremental net costs saved per QALY gained vary from around £750 to around £3150.

A number of assumptions were made which could under or overestimate the cost per QALY: the cost-effectiveness estimates were not sensitive to these assumptions (see modelling report for further details – available from www.nice.org.uk/page.aspx?o=PhysicalActivityMain).

Overall, brief interventions in primary care were found to be cost effective.

Appendix B: gaps in the evidence

PHIAC identified a number of gaps in the evidence related to the specific interventions under examination. However, this does not mean that these are the only research priorities for the promotion of physical activity as a whole. A broader examination of the promotion of physical activity, including the research priorities, will be undertaken as part of the development of NICE's programme guidance on physical activity[18]. The draft scope for this work was published on the Institute's website in March 2006.

During the development of this guidance there was a general lack of evidence on:

- effectiveness and cost effectiveness
- long term outcomes
- the differential effect of interventions according to the target group's age, gender, socioeconomic position and ethnicity
- the impact of interventions on intermediate outcomes such as knowledge, awareness, attitudes and skills in relation to physical activity.

Specific gaps within each of the four areas are set out below. These are based on the evidence statements that can be found in appendix A.

1. Brief interventions

    a. Differential effect of different professional groups delivering the intervention.
    b. Negative effects, not just in relation to injuries.
    c. Differential effects of varying 'doses' of the interventions (e.g. time spent).

(Evidence statement BI.3a, BI.3b, BI.3c, IDE)

[18] See www.nice.org.uk/page.aspx?o=PhysicalActivityandEnv

2. Pedometers

    a. Effect on overall physical activity.
    b. As an adjunct to other interventions.

(Evidence statements P.1, IDE)

3. Exercise referral

    Effect of follow-up on long term changes in physical activity.

(Evidence statements ER.1, ER.2)

4. Walking and cycling

    Differential effect according to the setting where it takes place.

(Evidence statement WC.1)

The Committee made 5 recommendations for research. These are listed in section 5.

Appendix C: membership of the Public Health Interventions Advisory Committee

NICE has set up a standing committee, the Public Health Interventions Advisory Committee (PHIAC), which reviews the evidence and develops recommendations on public health interventions.

Membership of PHIAC is multidisciplinary, comprising public health practitioners, clinicians (both specialists and generalists), local authority employees, representatives of the public, patients and/or carers, academics and technical experts as follows.

Mrs Cheryll Adams Professional Officer for Research and Practice Development with the Community Practitioners' and Health Visitors' Association (CPHVA)

Professor Ron Akehurst Professor of Health Economics and Dean of the School of Health and Related Research (ScHARR), University of Sheffield

Professor Sue Atkinson Regional Director of Public Health for London. Health Adviser to Mayor and Greater London Authority

Professor Michael Bury Emeritus Professor of Sociology at the University of London and Honorary Professor of Sociology at the University of Kent

Professor Simon Capewell Chair of Clinical Epidemiology, University of Liverpool

Professor K K Cheng Professor of Epidemiology, University of Birmingham

Mr Philip Cutler Forums Support Manager, Bradford Alliance on Community Care

Professor Brian Ferguson Director of the Yorkshire and Humber Public Health Observatory

Dr Ruth Hall Director of Public Health for Avon, Gloucestershire and Wiltshire Strategic Health Authority

Ms Amanda Hoey Director, Consumer Health Consulting Limited

Mr Andrew Hopkin Senior Assistant Director for Derby City Council

Dr Ann Hoskins Director of Public Health for Cumbria and Lancashire Strategic Health Authority

Professor David R Jones Professor of Medical Statistics in the Department of Health Sciences, University of Leicester

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CHAIR Dr Catherine Law Reader in Children's Health, Institute of Child Health, University College, London

Ms Sharon McAteer Health Promotion Manager, Halton PCT

Professor Klim McPherson Visiting Professor of Public Health Epidemiology Department of Obstetrics and Gynaecology, University of Oxford

Professor Susan Michie Professor of Health Psychology, BPS Centre for Outcomes Research & Effectiveness, University College, London

Ms Jane Putsey Lay Representative. Chair of Trustees of the Breastfeeding Network for Cumbria and Lancashire Strategic Health Authority

Dr Mike Rayner Director of British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford

Mr Dale Robinson Chief Environmental Health Officer for South Cambridgeshire District Council

Professor Mark Sculpher Professor of Health Economics at the Centre for Economics (CHE), University of York

Dr David Sloan Director of Health Improvement & Public Health for City & Hackney Teaching PCT

Dr Michael Varnam General Practitioner with the Community of Inner Nottingham

Dr Dagmar Zeuner Consultant in Public Health with Islington PCT

Appendix D: summary of the methods used to develop this guidance

Introduction

The reports of the reviews and economic analysis include full details of the methods used to select the evidence (including search strategies), assess its quality and summarise it.

The minutes of the PHIAC meetings provide further detail about the Committee's interpretation of the evidence and development of the recommendations.

All supporting documents are listed in appendix E and are available from the NICE website at: www.nice.org.uk/PHI002

The guidance development process

The stages of the guidance production process are outlined in the box below.

1. Draft scope
2. Stakeholder meeting
3. Stakeholder comments
4. Final scope and responses published on website
5. Evidence reviews and cost-effectiveness modelling
6. Synopsis report of each review (executive summaries and evidence tables) circulated to stakeholders for comment
7. Comments and additional material submitted by stakeholders
8. Review of additional material submitted by stakeholders[19]
9. Synopsis, full reviews, supplementary reviews and economic modelling submitted to PHIAC
10. PHIAC produces draft recommendations
11. Draft recommendations published for comment
12. Responses to comments published
13. PHIAC amends recommendations
14. Final guidance published on website

Key questions

The key questions were established as part of the scope. They formed the starting point for the reviews of evidence and facilitated the development of recommendations by PHIAC.

PHIAC considered whether the following interventions are effective and cost effective in increasing physical activity: brief interventions in primary care, pedometers, exercise referral schemes and community-based exercise programmes for walking and cycling. For each intervention, a number of questions were asked.

1. What is the aim/objective of the intervention?

[19] Submitted material is screened against inclusion criteria used in the reviews.

2. How does the actual content of the intervention influence effectiveness?

3. How does the way that the intervention is carried out influence effectiveness?

4. Does the effectiveness depend on the job title/position of the deliverer (leader)? What are the significant features of an effective deliverer (leader)?

5. Does the site/setting of delivery of the intervention influence effectiveness?

6. Does the intensity (or length) of the intervention influence effectiveness/duration of effect?

7. How does the effectiveness vary with age, gender, class, ethnicity, etc?

8. How much does the intervention cost (in terms of money, people, time)?

9. What evidence is there on cost effectiveness?

10. What are the barriers to implementing effective interventions?

Reviewing the evidence of effectiveness

Four separate reviews of effectiveness were conducted, one for each intervention.

Identifying the evidence

Separate searches were conducted for each review. English language papers published between 1990 and June 2005 were identified by searching the following electronic databases: Medline, Pubmed, Embase, Cinahl, PsychInfo, and Sports Discuss. In addition, the TRIS Transport Database was searched for the walking and cycling review.

Details of the search terms and strategies are included in the reports of each review.

Selection criteria

Studies were included if:

- a controlled research design was used
- a measure of physical activity or fitness was reported, both at baseline and at least 6 weeks after the start of the intervention.

Studies were excluded if:

- they were not studies of interventions
- the interventions described fell outside the scope
- they did not cover an adult population
- there was no control or comparison group
- they did not present pre- and post- intervention physical activity outcomes
- follow-up was less than six weeks.

Quality appraisal

Two reviewers assessed the methodological rigour and quality of papers using the NICE methodology checklists, as set out in the NICE technical manual 'Guideline development methods'[20]. Each study was described by study type (categorised as types 1–4) and graded (++, +, -) to reflect the risk of potential bias arising from its design and execution:

Study type

1 Meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs).

2 Systematic reviews of, or individual, non-randomised controlled trials, case-control studies, cohort studies, controlled before-and-after (CBA) studies, interrupted time series (ITS) studies, correlation studies.

3 Non-analytical studies (for example, case reports, case series).

4 Expert opinion, formal consensus.

[20] National Institute for Clinical Excellence (2005) *Guideline development methods.* London: National Institute for Clinical Excellence.

Study quality

++ All or most criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.

+ Some criteria have been fulfilled. Those that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.

- Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

The main reasons for studies being assessed as (-) were:

- lack of randomisation
- analysis not done on an 'intention to treat basis'
- unvalidated physical activity measures
- outcome assessment was not blind
- no adjustment for baseline physical activity measure.

Study type and quality were described together. For example, as (1++) or (2-). The studies were also assessed for their applicability to the UK.

Summarising the evidence and making evidence statements

The review data was summarised in evidence tables (see full reviews and the synopsis). Outcomes of interest included both non-validated and validated measures (such as self-reported physical activity and measured VO_{2max} – a measure of maximal oxygen used). Where a measure such as self-report has used a non-validated technique, this is highlighted in the quality assessment.

The effectiveness of each intervention was examined:

- in the short term (6–12 weeks)
- in the longer term (over 12 weeks)
- over a long timeframe (for example, 1 year).

The findings from the reviews were synthesised and used as the basis for a number of evidence statements relating to each key question. The evidence statements reflect the strength (quantity, type and quality) of evidence and its applicability to the populations and settings in the scope.

Economic appraisal

The economic appraisal consisted of a review of economic evaluations and a cost-effectiveness analysis.

Review of economic evaluations

In addition to papers identified through the reviews of effectiveness (see above), separate searches were conducted on the NHSEED database (1994 to August 2005) and the HEED database (1958 to August 2005).

Studies were included if they assessed the cost effectiveness of one of the four interventions. Studies were excluded if they:

- were not included in the scope
- did not aim to change the participant's lifestyle in line with CMO guidelines
- simply investigated different ways of running an intervention.

Included studies were assessed for quality using a checklist based on the criteria developed by Drummond et al 1997[21]. Inclusion of QALYs as an outcome measure was essential at this stage. As with the reviews of effectiveness, studies were then given a score (++, +, -) to reflect the risk of potential bias arising from its design and execution. The evidence tables for the cost-effectiveness review are included in the review (see appendix E). Usually studies assessed as (-) lacked sensitivity analysis.

Cost-effectiveness analysis

An economic model was constructed to incorporate data from the reviews of effectiveness and cost effectiveness. The aim was to estimate the impact of a brief intervention in primary care: on participants' health and quality of life and cost savings for the NHS. The model used estimates of average QALYs gained over the simulation time period. (See review and modelling report for further details.)

[21] Drummond MF et al (1997) Critical assessment of economic evaluation. In *Methods for the Economic Evaluation of Health Care Programmes.* 2nd edition. Oxford: Oxford Medical Publications.

How PHIAC formulated the recommendations

At its first meeting, in December 2005, PHIAC considered the evidence of effectiveness and cost effectiveness and comments from stakeholders to determine:

- whether there was sufficient evidence (in terms of quantity, quality and applicability) to form a judgement
- whether, on balance, the evidence demonstrates that the intervention is effective or ineffective, or whether it is equivocal
- where there is an effect, the typical size of effect.

PHIAC developed draft recommendations through informal consensus, based on the following criteria.

- Strength (quality and quantity) of the evidence of effectiveness and its applicability to the populations/settings referred to in the scope.
- Effect size and potential impact on population health and/or reducing inequalities in health.
- Cost effectiveness (for the NHS and other public sector organisations).
- Balance of risks and benefits.
- Ease of implementation and the anticipated extent of change in practice that would be required.

PHIAC also considered whether research should be a condition for a recommendation where evidence was lacking.

Where possible, recommendations were linked to an evidence statement(s) – see appendix A for details. Where a recommendation was inferred from the evidence, this was indicated by the reference ‘IDE’ (inference derived from the evidence).

The draft guidance, including the recommendations, was released for consultation in January/February 2006. PHIAC met in February 2006 to consider stakeholder comments and to revise the recommendations

accordingly. The guidance was signed off by the NICE Guidance Executive in March 2006.

Appendix E: supporting documents

Supporting documents are available from the NICE website (www.nice.org.uk/PHI002). These include the following.

- Reviews of effectiveness: brief interventions in primary care; pedometers; exercise referral schemes; community-based exercise programmes for walking and cycling.
- Economic analysis: review and modelling report.