



A Toolkit for the Design, Implementation & Evaluation of Exercise Referral Schemes

A guide to evaluating exercise referral
schemes



BHF National Centre
physical activity+health

Making physical activity a priority

Introduction

Welcome to the exercise referral toolkit - a guide for referring healthcare professionals.

A well-planned and carefully executed evaluation will reap more benefits for all stakeholders than an evaluation that is thrown together hastily and retrospectively. In light of the NICE guidance and the current political and economic climate the importance of evaluation cannot be underestimated, exercise referral schemes must be able demonstrate whether they are both effective and cost-effective to justify their existence.

This guide outlines the significance of evaluating exercise referral schemes and the importance of selecting an appropriate evaluation design. It provides helpful hints on how to improve the evaluation of exercise referral schemes and includes a checklist for evaluating schemes.

To accompany this resource, we have also developed:

- **Guidance for referring healthcare professionals** - a resource which provides background information on exercise referral schemes, detailing information about the referral pathway, clinical governance and scheme governance.
- **Guidance for exercise professionals** - a resource which outlines the roles and responsibilities of the exercise professional and includes some practical tips for working with referred patients.
- **Guidance for exercise referral scheme coordinators** - a resource outlining the key steps to developing and coordinating a high quality exercise referral scheme.
- **Guidance for exercise referral scheme commissioners** - this resource provides an overview of the national guidance and protocols for developing and commissioning local exercise referral schemes.
- **A guide to qualifications and training** - includes guidance on qualifications and training for professionals involved in the delivery, coordination and commissioning of exercise referral schemes.



A guide to evaluating exercise referral schemes

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Terms of Use

The aim of this toolkit is to provide an easy-to-read, practical guide for all those professionals involved in the delivery, coordination, commissioning and evaluation of exercise referral schemes. These professionals include general practitioners, practice nurses, community nurses, allied health professionals (physiotherapists, dieticians etc.), exercise professionals, health promotion/public health specialists, commissioners and researchers.

The toolkit has been developed in consultation and collaboration with a range of professionals involved with exercise referral schemes and key national stakeholders.

It draws upon current Government policy for the design and delivery of quality assured exercise referral schemes; it is **NOT** a replacement for such national policy. Furthermore it **should NOT** be used in isolation from the National Quality Assurance Framework for exercise referral schemes (NQAF).

It is a tool to aid the design, delivery and evaluation of exercise referral schemes, but is **NOT POLICY**. It uses the evidence base and local scheme practice to support schemes in meeting the guidelines set out within the National Quality Assurance Framework and to raise standards within schemes.



Using the toolkit

It is recognised that capacity, resources and funding vary across schemes and that some schemes are struggling to implement elements of the National Quality Assurance Framework and consequently may struggle to adopt some of the recommendations set out within the toolkit.

The toolkit is not designed as a 'blueprint' for how exercise referral schemes must be designed, implemented and evaluated; it offers some best practice principles for all those involved in the delivery, management and commissioning of exercise referral schemes. It is for individual schemes to consider whether the implementation of these principles will improve the design, delivery and effectiveness of their scheme, given the capacity and resources available.

Many schemes may already be meeting the recommendations outlined within the toolkit, in which case the toolkit can be used as a resource for professionals to take a fresh look at their scheme or as a guide for on-going reflection.

Some local health boards and primary care trusts may have developed an integrated system for the promotion of physical activity, which offers a range of physical activity opportunities for the local population, such as led-walks, green-exercise, exercise referral schemes and/or specialist condition specific whole exercise classes. This toolkit is predominantly concerned with exercise referral schemes designed for low to medium risk patients which

involve the transfer of medical information from a healthcare practitioner to an appropriately qualified level 3, exercise professional.

Whilst it is recommended that, where appropriate, primary care professionals should advise patients to increase their physical activity it should be noted that recommending or sign-posting patients to local physical activity opportunities such as lay-led walking schemes is quite distinct from referring an individual to a dedicated service and transferring relevant medical information about this individual to this service.

Where schemes offer specialist condition specific whole exercise classes for patients/clients with any conditions covered by the level 4 national occupations standards these schemes should ensure they comply with the relevant governance arrangements and quality assurance guidelines.



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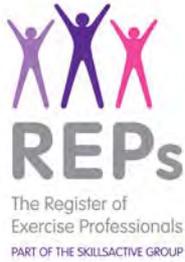
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Supporting Partners



**East of England Regional
Physical Activity Alliance**

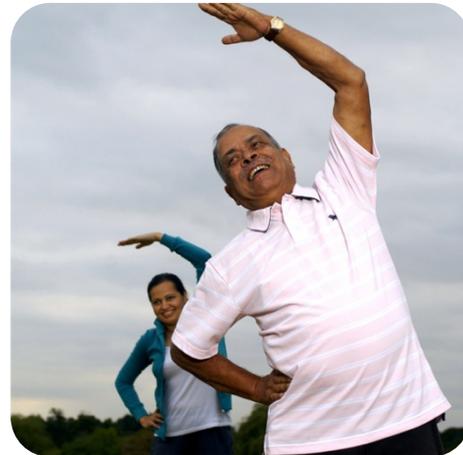




Executive summary

A well-planned and carefully executed evaluation will reap more benefits for all stakeholders than an evaluation that is thrown together hastily and retrospectively.

In light of the NICE guidance and the current political and economic climate the importance of evaluation cannot be underestimated, exercise referral schemes must be able demonstrate whether they are both effective and cost-effective to justify their existence.



All parties involved in exercise referral schemes, regardless of what role they play, have a responsibility to consider whether the scheme achieved what it set out to do and whether it is a worthwhile investment. It is recommended that schemes undertake both process and outcome evaluation to build a more comprehensive and robust evidence base on this popular public health intervention.

Checklist for evaluating schemes:

- Ensure the scheme has clearly defined aims and objectives.
- Develop a logic model to demonstrate how the scheme will contribute to achieving the aims and objectives.
- Develop clear evaluation questions - what do you want to know about your scheme?

- Identify the resources available for evaluation and select an appropriate evaluation design.
- Consider the evaluation framework and identify what will be included in your evaluation?
- Ensure you have set realistic timelines to observe changes in your selected outcome indicators.
- Decide how outcome indicators will be assessed - the 'tools' section of this toolkit will help.
- Decide who the most appropriate person to collect the evaluation data is.
- Ensure you have appropriate expertise to be able to analyse data.
- Write up the results of the evaluation in a report.
- Use the evaluation findings to help review and develop your scheme.

Evaluation is only worthwhile if it will make a difference, it is therefore, important that evaluation results are interpreted and findings are disseminated to key stakeholders and other relevant audiences.



A Guide to Evaluating ERS

This guide outlines the significance of evaluating exercise referral schemes and the importance of selecting an appropriate evaluation design and provides guidance on how best to evaluate an exercise referral scheme.

It aims to identify how process and outcome evaluation can be utilised in the context of exercise referral schemes. It outlines those indicators that are likely to change during the course of an exercise referral scheme (in the short term), and those indicators which may require longer-term evaluation to detect changes and to detect changes and demonstrate effectiveness.



An evaluation framework is provided to help professionals consider what are the appropriate data collection methods, as well as timelines, for the evaluation of an exercise referral scheme.

1.0 The importance of evaluation

The snapshot of current practice (reported in the audit report of the toolkit) has shown that most exercise referral schemes in England, Scotland and Northern Ireland carry out relatively limited evaluation.

Furthermore, where more extensive or robust evaluation has taken place this has offered little scope for comparisons between schemes due to the differences in the evaluation methods adopted. The need for more rigorous evaluation of exercise referral schemes was highlighted by the NICE public health intervention guidance¹ on 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.

The NICE review of the effectiveness of exercise referral schemes stated that:

“The evidence from two randomised controlled trials suggest 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 (6-12 weeks).”

Evidence Statement ER1
p23 NICE (2006)¹

“However, evidence from four trials 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).”

Evidence Statement ER2
p23 NICE (2006)¹

Based on this evidence the NICE Public Health Interventions Advisory Committee subsequently concluded 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 and recommended that:

“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.”

p6 NICE (2006)¹

This recommendation and the overall lack of evidence on the impact and outcomes of exercise referral schemes has put increasing focus on schemes to undertake more robust evaluation to demonstrate their effectiveness. The NICE guidance has

signalled the need to build a national evidence base on the long-term effectiveness of exercise referral schemes for increasing physical activity.

All parties involved in exercise referral schemes, regardless of what role they play, have a responsibility to consider whether the scheme achieved what it set out to do and whether it is a worthwhile investment. There are several important reasons for undertaking an evaluation of an intervention; a few are presented below with examples of the types of questions that any evaluation should be able to answer.

Contribute to understanding what was delivered:

- Who made referrals to the scheme?
- What was the content of patient consultations?
- What physical activity opportunities were available?
- What activities did patients participate in?

Assess whether aims and objectives have been achieved:

- Did the scheme achieve the desired outcomes?
- Where there any unexpected outcomes of the scheme?

Help judge the value of a programme:

- What benefits (if any) did patients get from the scheme?
- How do the benefits of this scheme compare to other activities which you invest time and resources into?

Identify best practice:

- What is working well within the scheme?
- What aspects of the scheme could be improved?

Assist in planning:

- What processes can be put in place to improve the delivery of the scheme?
- What actions are necessary to develop the long-term sustainability of the scheme?

In the past, evaluation has been sidelined or in some instances totally forgotten as the focus has centred on running the exercise referral scheme, however in light of the NICE guidance and the current political/economic climate the importance of evaluation cannot be underestimated, schemes must be able demonstrate whether they are both effective and cost-effective to justify their existence.

2.0 Evaluation Design

Evaluation can be a mysterious process for the uninitiated and often even for those with extensive experience. To decide upon an appropriate evaluation design, professionals need to be clear about the main focus of the evaluation, the specific questions to be addressed and the resources available. Once the focus and scope of the evaluation have been decided, the next step is to identify what type of data to collect and how to collect those data.

In general, a stronger evaluation design increases the confidence with which conclusions can be drawn from the findings. In particular, a strong evaluation design can indicate that the outcomes were caused by the intervention itself rather than by chance. In the hierarchy of evidence that influences healthcare policy and practice, it is generally acknowledged that the strongest scientific evidence comes from experimental designs. Randomised Controlled Trials (RCTs) are considered by most to be the 'gold standard'. Whilst it is accepted that a randomised controlled trial will provide the most robust scientific evidence of effectiveness it may not always be feasible to use an optimal scientific design with public health interventions, such as exercise referral schemes due to the multiple



stakeholders and the different elements of the intervention.² Furthermore, given the almost universal provision of exercise referral schemes across the UK the feasibility of undertaking a randomised controlled trial is likely to preclude a satisfactory or impartial outcome.

The context within which exercise referral schemes operate, the multi-sector partnerships, the diverse populations engaged and the range of services utilised may be more important elements in some exercise referral scheme evaluations' than the need to generate scientific proof that any increase in physical activity is attributable to the scheme.

Health professionals involved in delivering exercise referral schemes are generally not experienced in rigorous evaluation and may therefore

not be equipped to undertake complex and highly controlled research methodology. Furthermore, they are often required to take a flexible and pragmatic approach to evaluation due to constraints around budget and staff time. These factors need to be taken into account when selecting the evaluation design.

Historically, non-experimental evaluation designs have been adopted by exercise referral schemes; however this is the least scientific approach to evaluation and provides the weakest evidence and is often not considered as acceptable evidence for inclusion in systematic reviews of effectiveness. Exercise referral schemes should assess what resources they have for evaluation and strive to undertake the most rigorous evaluation which resources and capacity permit.

To improve the quality of evaluations it may be worthwhile schemes investing the time and money to increase the evaluation expertise of those delivering the scheme or employing a specialist evaluation team for more robust evaluation.

Refer to appendix 1 for further information on evaluation designs.



3.0 Evaluation Expectations

Evaluation is an important aspect of all exercise referral schemes. However, schemes are often under pressure to adopt unrealistic measures of success, such as reduced mortality rates or demonstrable cost benefits. It is therefore, essential to establish practical and feasible expectations for the scale and scope of the evaluation activities.

Commissioners should communicate their expectations for both the scheme and the evaluation of the scheme. Ideally evaluation frameworks should be developed in partnership with key stakeholders, e.g. commissioners, leisure providers, referrers, programme staff, services users, and where feasible and appropriate, an evaluation expert. Furthermore, the evaluation framework should be agreed when developing and planning the scheme.

It is important to have a clear statement of what aspects of the scheme the evaluation should focus on and what outcomes are of importance to commissioners and other stakeholders at the outset. These expectations should be matched with the necessary resources and staff with the appropriate skills and training.

The World Health Organisation (WHO) guidelines³ for the evaluation of health promotion interventions provide some useful guidelines on the allocation of resources for evaluation. These guidelines recommend that at least 10% of the total budget for an intervention or programme should be allocated to evaluation activities. Ideally, 15-20% of total budget should be allocated to evaluation.

It is recognised that many exercise referral schemes are operating on limited budgets and resources; however, it is essential to understand whether these resources are being used to maximum and best effect. Without undertaking evaluation it will remain unclear whether exercise referral schemes are a worthwhile investment or whether it may be appropriate to invest these resources in alternative interventions.

The WHO guidelines recommend that policy makers ensure that an appropriate mix of both process and outcome information is used to assess programme implementation as well as impact on desired outcomes.



The remainder of this guide adopts the WHO guidelines regarding process and outcome evaluation and aims to identify how process and outcome evaluation can be used in the context of exercise referral schemes. It outlines those indicators that are likely to change during the course of an exercise referral scheme (in the short term), and those indicators which may require longer-term evaluation to detect changes and demonstrate effectiveness. An evaluation framework is provided to help professionals consider what are the appropriate data collection methods as well as timelines for the evaluation of an exercise referral scheme.

4.0 Evaluation Planning

Evaluation should be considered an integral part of programme design and implementation. It is important to think about evaluation at the start and during the planning of a programme and not view the evaluation as something to be 'added on' at the end. Programme evaluation is a continuous process and thus, it is important to ensure that evaluation occurs during all phases of an exercise referral scheme.

A well-planned and carefully executed evaluation will reap more benefits for all stakeholders than an evaluation that is thrown together hastily and retrospectively.

The resource - *'Guidance for Exercise Referral Scheme Coordinators'* outlines the importance of planning and setting clear objectives for the scheme. When developing objectives it is important to consider the SMART acronym. SMART stands for:

Specific - Do the objectives clearly state exactly what you are trying to achieve?

Measurable - Can you measure the extent to which you have achieved the objectives?

Achievable - Are the objectives attainable?

Realistic - Can the objectives realistically be achieved with the available resources?

Time - Have you set clear timelines in which to achieve the objectives?
Developing objectives which are

SMART helps to ensure the objectives are measurable and that the evaluation is able to determine the extent to which each objective has been achieved.

The Yew Tree example, featured in the guide for exercise referral scheme coordinators has the following objectives:

- Screen the practice populations to identify all patients with a Framingham 10 year predicted CHD risk of 20% or more.
- Invite 15% of all 'at risk' patients to take part in the exercise referral scheme within six months of being identified.
- Increase the physical activity levels of all patients attending the exercise referral scheme by 50% at the end of the 12 week scheme.

These objectives clearly state what the scheme aims to achieve, by how much, and over what time period. The specificity of the objectives makes it easier to consider how each objective will be measured and

evaluated to determine the success of the scheme. Issues such as how and when the data might be collected, by whom, and how it will be used, are also issues that should be addressed at the developmental stages of an exercise referral scheme.

4.1 Introducing a Programme Logic Model for ERS

Considering what outcomes are of interest and how they are expected to be met can help inform and improve the design and delivery of a scheme. Programme logic models provide a graphic overview of the components of a health promotion programme, how various components are linked, and how the programme activities will contribute to achieving the intended outcomes. Using a logic model can help to identify an appropriate set of measures and data collection methods to provide an evaluation of the scheme against the stated aims and objectives. Planning the evaluation using a logic model can help to ensure that each outcome indicator is measurable, as well as highlight which elements of the programme may be most likely to yield useful evaluation data.

In all evaluations involving before and after data collection, timing of the measurements is critical. This is particularly important for exercise referral schemes, as the short duration of the scheme may not allow for changes in outcome measures to be observed. A logic model can assist in identifying appropriate timelines for evaluation.

A logic model usually consists of four main components:

- **Inputs.**
- **Activities.**
- **Outputs.**
- **Outcomes.**

Inputs reflect the things that are invested in a scheme, for example staff time, money, facilities and equipment.

Activities include anything that is delivered by the scheme, including training of health professionals and delivering exercise sessions.

Outputs relate to the number of people who are reached by the scheme, including the number of health professionals recruited and trained, the number of patients referred to the scheme. Outputs also include patient satisfaction with the scheme.

Outcomes are usually expressed in terms of short-term, medium-term, and long-term outcomes. Short-term outcomes are likely to occur over the course of an exercise referral scheme and might include changes in awareness, knowledge and attitudes.

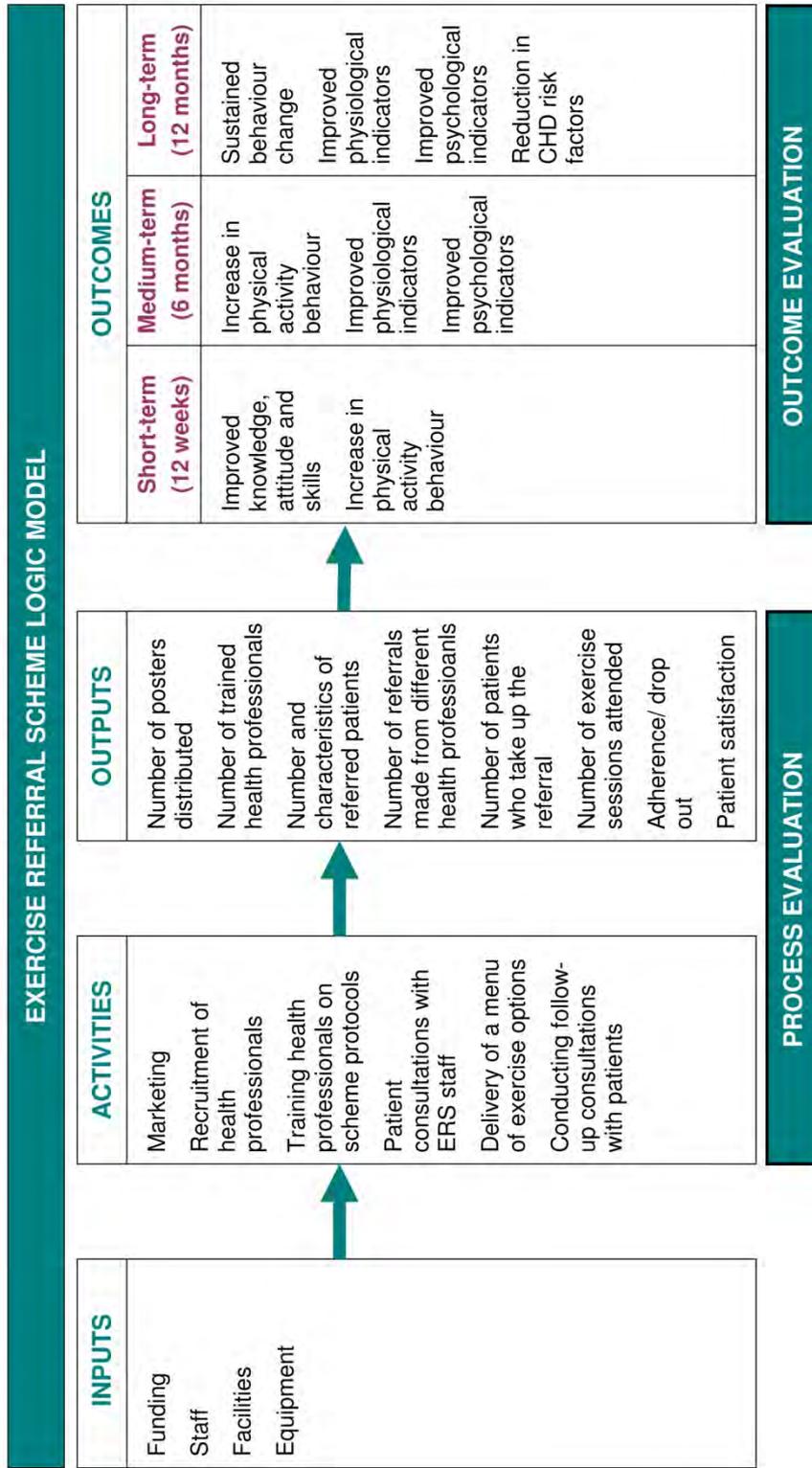
While physical activity levels may change over the course of the referral period, in many cases it will take longer than the typical 12 week referral period to influence longer term changes. Evaluating sustained increases in physical activity in the medium- and long-term requires the re-assessment of participants' physical activity levels approximately 6 or 12 months after completion of the scheme. Assessing physical activity at 12 months may be important for capturing data in the same or comparable season since changes in season have been shown to influence physical activity levels, making comparisons across seasons (e.g. using a 6 month timescale) problematic.

Changes in physiological and psychological indicators will follow changes in physical activity levels. As a result, it may take between 6 and 12 months to observe changes in these indicators. Long-term outcomes are the overarching outcomes of a

scheme, and are likely to follow sustained increases in physical activity. The long-term outcome of exercise referral schemes is a change in disease risk, which may take a minimum of a year to observe.

An example logic model is presented in Figure 1 below and a template logic model is included in the appendices (see appendix 2).

Figure 1: Exercise referral scheme example logic model



5.0 Essential data collection: process and outcome evaluation

Many evaluations of behavioural change programmes, including exercise referral schemes, have tended to focus on outcome evaluation, which measures the effects of a programme in the short, medium and long-term, and is useful to determine whether the scheme met its stated aims and objectives.

Process evaluation, which is often over-looked, provides an insight into the process of implementation and provides information on what went on during a scheme. Process evaluation can help in identifying factors contributing to the success or failure of a programme.

5.1 Process evaluation

It is recommended that every exercise referral scheme should undertake process evaluation. Process evaluation is concerned with the extent to which a programme is delivered as intended and should be on-going throughout the duration of the exercise referral scheme. Process evaluation helps us to understand the reasons underlying whether or not a programme was successful, which is important for policy development and implementation.

Three main components of process evaluation include:

- 1) The extent to which the programme was delivered as planned
- 2) The extent to which the scheme reached the target population
- 3) Participant satisfaction with the scheme.

5.1.1 The extent to which the scheme was delivered as planned

An exercise referral scheme often involves many staff and exercise facilities, which is likely to result in variations in the way the scheme is delivered. It is important to record these differences in delivery to determine their potential impact on the effectiveness of the scheme. This might include monitoring the number and content of one-to-one consultations with patients, the consistency in delivery of exercise sessions across centres, or the amount of support provided to patients in the scheme.

5.1.2. The extent to which the scheme reached the target population

At this point, in time it may be useful to look at the difference between monitoring and evaluation. Monitoring describes the collection of routine information, such as attendance figures and drop-out rates, to check the extent to which a project is proceeding according to plan. Monitoring is, therefore part of the evaluation process: it is not a substitute for evaluation.²

Participant characteristics:

Recording the demographic characteristics of participants (gender, age, ethnicity, socio-economic status), as well as the reason for referral, will give an indication of whether the scheme is reaching its target population. This information will also be useful to determine which members of the population exercise referral schemes are most appropriate for.

Demographic data should be systematically collected from all participants who are referred to the scheme. To ensure demographic data is consistent across schemes, to facilitate comparability, exercise referral schemes may wish to utilise the age and ethnicity categories which are utilised in the Outdoor

Health Questionnaire, developed by Natural England (see appendix.3.).

The Outdoor Health Questionnaire also includes the Single-Item Measure, developed by the BHFNC in collaboration with a number of key agencies,ⁱ which can be utilised for assessing patients' baseline physical activity levels, helping to determine whether the scheme is attracting inactive participants, and also facilitating comparability of patients' baseline physical activity levels across schemes.

Participant demographics can be used to explore patterns between who is offered a referral, who takes up the offer of referral, who attends the exercise sessions, who completes the referral programme and who drops out of a scheme. This data can be used to determine who the scheme is most appropriate for.



ⁱ Big Lottery Fund, Cycling England, Department of Health, Natural England, NHS Health Scotland, Scottish Government, Sports Council Wales, Sport England, Sustrans, Walk England and Welsh Assembly Government

Service utilisation:

Programme reach is concerned with take up and adherence to a scheme. Exercise referral schemes should monitor:

- The total number of referrals made to the scheme.
- Patient 'uptake' of the scheme i.e. number of patients attending at least one session.
- The number of patients who attend or do not attend scheduled consultations.
- Attendance rates at exercise sessions.
- Adherence and drop-out rates.

Exercise referral schemes need to clearly define what they mean by adherence, completion and drop-out as this will provide more accurate and meaningful evaluation data. In addition, careful monitoring of the number of patients who attend, or do not attend, scheduled consultations; the number of exercise sessions patients' attend and the number of patients' who cease attending sessions would allow for the correct classification of patients as either adherers, completers or drop-outs.

Registers of attendance should be completed by exercise professionals involved in the scheme, in order to monitor levels of attendance as well as the activities that participants

undertake. Activity diaries may be an appropriate method of collecting data from participants who attend less structured activities, or to capture physical activity that participants undertake in addition to attending the structured exercise referral sessions. It would be ideal if monitoring of attendance was done by swipe cards rather than human entry to allow for easy and reliable data collection and monitoring.

5.1.3 Participant satisfaction with the scheme

The effectiveness of schemes will be influenced by the characteristics of participants and whether the characteristics of the scheme are appropriate for them. It is therefore important to gain feedback on participants' experiences of the scheme to help understand factors influencing adherence and drop out, and to inform developments to the implementation of the scheme.

The REFERQUAL⁴ is a 35 item self-report tool, developed to assess the service quality of general practice exercise referral schemes. Qualitative data collection, for example interviews and focus groups, can provide a useful insight into participants' experiences of a scheme and why some groups are more suited

to a particular intervention than others. Exploring participant satisfaction with people who drop out of the scheme, as well as people who complete the scheme, will enable the scheme to understand the barriers as well as the facilitators to participation, and assist in planning appropriate developments to reduce the number of participants who fail to complete the scheme.

It is possible that participation in an exercise referral schemes has given participants the confidence to access mainstream physical activity opportunities, however if these patients do not complete the exercise referral scheme they are usually considered a 'drop out'. Following up participants who drop out of a scheme can be useful for capturing data on whether these participants have continued to be active outside of the scheme.

Capturing information about how the scheme has been implemented, who has utilised it, together with views of the service users can facilitate interpretation of outcome effects.

5.2 Outcome Evaluation

Outcome evaluation is useful to determine what the scheme accomplished and whether the scheme met its aims and objectives. Assessments are taken before and after a scheme to detect change. Short-term outcomes such as changes in attitudes are the most likely indicators to change over the course of an exercise referral scheme. Long-term tracking of participants is required to determine whether schemes are meeting long-term outcomes, for example a change in disease risk. Any outcome indicators which are to be assessed will need to be measured at the beginning of the scheme (baseline) in order to detect any changes.

5.2.1 Knowledge, Attitudes & Skills

NICE¹ recommend that evaluation measures should include intermediate outcomes such as knowledge, attitudes and skills, as these are the most likely indicators to change over the course of an exercise referral scheme. These indicators may be useful for determining future intentions to change physical activity behaviour.

The Stages of Change Questionnaire:

The 'stages of change' model of behaviour change suggests that people go through five stages on route to changing their behaviour; pre-contemplation, contemplation, preparation, action, and maintenance. The Stages of Change Questionnaire⁵ consists of 4 questions designed to categorise respondents into one of the five stages. This model may be appropriate for helping to demonstrate changes in attitude and motivation which are likely to lead to increased, and potentially sustained, physical activity behaviour (see appendix.4).

The Self-Efficacy for Exercise Scale:

Self-efficacy is defined as 'a person's belief about their ability to succeed in specific situations.' Increases in knowledge and skills, attained through participation in an exercise referral scheme, are likely to increase participants' self-efficacy levels, which in turn, will increase the likelihood of participants continuing to take part in physical activity.

The Self-Efficacy for Exercise scale⁶ (SEE) consists of nine situations that might influence participation in physical activity (see appendix.5). Respondents are asked to rate their confidence (on a scale of 0-10) at

exercising three times a week for 20 minutes in relation to each scenario. Although the SEE scale was developed to assess confidence to exercise 3 x a week for 20 minutes, which is not aligned with the current UK physical activity recommendations, the SEE scale has been shown to be a significant predictor of physical activity, and may therefore be a useful tool for determining participants future physical activity intentions.⁶

5.2.2 Physical Activity Levels

The primary aim of exercise referral schemes is to increase participants' physical activity levels and therefore measuring changes in physical activity should be a central focus of the evaluation. Physical activity levels may change over the course of an exercise referral scheme; however in many cases it may take longer than the typical referral period to detect marked changes in physical activity (e.g. 6 months).

Evaluating sustained increases in physical activity in the long-term requires the reassessment of participants' physical activity levels approximately 6, 9 or 12 months after completion of the scheme.

Physical activity is a complex behaviour and poses some difficulty for measurement and the assessment of change. An accurate assessment of a person's physical activity requires an understanding of type frequency, intensity, and duration of exercise.

The development of objective physical activity measurement tools such as pedometers and accelerometers has led to more accurate measurement of physical activity levels.

These types of measurement tools can be expensive, and require specific expertise to analyse and interpret data. The limited time and resources, as well as limited evaluation skills in exercise referral schemes narrows the choice of data collection methods.

A less accurate, but more feasible method of assessing physical activity is via self-report. Self-report measurement tools are a cheap and simple method of collecting physical activity data, however the choice of which measurement tool to utilise is not straight forward. The majority of self-report physical activity tools have been designed for surveillance and population level monitoring of physical activity levels. Physical activity tools designed to detect

change over time are far less established. Although the selection of appropriate physical activity measurement tools is limited, this section aims to identify some tools which may be appropriate for use in exercise referral schemes. For a more detailed review of physical activity measurement tools see Hillsdon.ⁱⁱ

Seven-Day Physical Activity Recall:

The Seven-Day Physical Activity Recall⁷ (PAR) estimates the amount of time spent undertaking physical activity, strength, and flexibility activities in the past seven days (see appendix.6). The PAR includes a variety of physical activities including aerobic exercise, work related activity, gardening, and walking, however only activities of at least moderate intensity are utilised when estimating total calorie expenditure. The detailed breakdown of participants' physical activity levels, which is provided by the seven-day PAR, may be particularly useful for understanding changes in participants' physical activity behaviour.

ⁱⁱhttp://www.noo.org.uk/uploads/doc721_2_PA_measurement_tools_review.pdf

The PAR protocols highlight the importance of developing good interview methods and skills, which should be taken into consideration before utilising this tool.

The Godin Leisure Time Exercise Questionnaire:

The Godin Leisure Time Exercise Questionnaire⁸ (GLTEQ) is a 3-item self-report measure that assesses the frequency of mild, moderate, and vigorous exercise done for at least 20 minutes per session during a typical week (see appendix.7).

The GLTEQ is considered one of the most reliable measures of self-report physical activity, is easy to understand and has been shown to be responsive to changes in behaviour.⁹ Disadvantages of the GLTEQ is that it does not provide information on the types of activities which respondents undertake, nor does it allow the assessment of physical activity levels against the CMO's recommendation of 30 minutes of moderate intensity activity on at least five days of the week.¹⁰



6.0 Desirable data collection: outcome evaluation

Given the scientific evidence on the health benefits of regular physical activity¹⁰ it can be inferred that an increase in physical activity levels will lead to a range of outcomes, including improved physical and psychological health. These changes will generally not be observed over the course of a 12 week exercise referral scheme, but are likely to occur over time, if physical activity levels are sustained. Depending on available resources and expertise, schemes may wish to evaluate changes in physiological and psychological indicators to help demonstrate the outcomes of the scheme.

6.1 Physiological Outcomes:

Physiological measurement requires appropriate equipment and staff expertise and is often more intrusive than self-report data collection methods. Exercise referral schemes have tended to focus on blood pressure and body composition measures, which are relatively non-invasive.

Blood Pressure:

Regular physical activity can help to lower blood pressure. A small reduction in blood pressure is likely to be observed within the first ten weeks

of increased physical activity, however significant changes in blood pressure are likely to take longer. Blood pressure has traditionally been assessed using a sphygmomanometer, although there are also a wide range of automatic machines available for assessing blood pressure. Where exercise professionals are expected to take blood pressure readings as part of the evaluation it is recommended that they undergo appropriate training to ensure the accuracy of readings.

Body Composition:

There are a number of methods for assessing body composition, the most common of which is skin fold measurements. Skin fold measurements are an inexpensive method of estimating body fat percentage, however the use of callipers requires a level of skill. The use of callipers may also be perceived as intrusive, and is not ideal for people who are obese. The introduction of automatic machines has led to easier and less intrusive data collection of body composition, although the accuracy of such machines is uncertain. These types of machines involve an electrical signal being sent through the body to determine the percentage of different



kinds of tissues. Disadvantages of these machines are that they are affected by hydration, food intake and skin temperature. It is important to remember that although some improvement in physiological indicators may be observed over the course of an exercise referral scheme; these changes are likely to be small in scale. Tracking participants in the longer-term may be necessary to demonstrate significant improvements in these indicators.

6.2 Psychological Outcomes:

Physical activity is associated with improved mood and reduced anxiety and depression.¹⁰ Schemes which specifically target patients with mental ill-health may be particularly interested in evaluating psychological indicators, however other exercise referral schemes may be interested evaluating the overall psychological wellbeing of referred patients. There are a number of self-report measures of perceived health and well-being.

The SF12:

The SF12 Health Survey¹¹ is a 12-item survey, measuring eight dimensions of perceived health; physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and

mental health (see appendix.8).

These scores are aggregated to produce a Physical Component Summary (PCS) and a Mental Component Summary (MCS), which have been shown to be sensitive to change.¹¹ There are two versions of the SF12, a standard four week recall version and an acute one-week recall version. An information request must be submitted to Quality Metric seeking permission to use the SF12 and there is a financial charge associated with using this survey. There is a manual available to support the SF12, which explains how responses should be scored; however, there is also a charge to obtain a copy of this resource.

The EQ-5D:

EQ-5D12 is a standardised instrument for use as a measure of health outcome, it comprises five questions relating to mobility, self-care; pain, usual activities, and psychological status (see appendix.9). Respondents are requested to rate the extent of problems they have in relation to each of these factors (response scale 1=no problem, 2=moderate problem, 3=severe problem). In addition, there is a Visual Analogue Scale (VAS) which provides a single index value for health status. The EQ-5D is a simple

tool to complete, however it is unclear how sensitive the tool is to detect change over time. As with the SF12, permission is required to utilise the EQ-5D.

The WHOQOL-BREF:

The WHOQOL-BREF¹³ is an abbreviated version of the WHOQOL-100 which has been developed to provide a short form quality of life assessment (see appendix 10). The WHOQOL-BREF contains a total of 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF is relatively short and easy to complete and can be utilised to assess changes in quality of life as a result of an intervention. The WHOQOL-BREF and accompanying user manual are available to download from the World Health Organisation website.

sustained increases in physical activity in the long-term.

The Framingham Disease Risk Calculator and the QRISK:

The Framingham Disease Risk Calculator and the QRISK incorporate age, sex, total cholesterol, HDL cholesterol, systolic blood pressure, and smoking to provide a prediction of an individual's risk of cardiovascular disease (CVD). There has been on-going debate by NICE over which tool should be recommended for use in England and Wales. Meanwhile Scotland is adopting an alternative tool called ASSIGN, which also incorporates social deprivation. Schemes wishing to assess longer term health outcomes, such as cardiovascular disease risk should check which tool is being used at a local level to ensure compatibility.

6.3 Changes in Disease Risk

Exercise referral schemes which have a large capacity for evaluation may choose to track participants in the long-term to demonstrate that they are achieving their overarching aim - to reduce the risk of disease amongst participants, which will follow

7.0 An evaluation framework for exercise referral schemes

As previously noted, health professionals involved in delivering exercise referral schemes are often required to take a flexible and pragmatic approach to evaluation due to constraints around budget, staff time and the evaluation skills of those involved.

The evaluation framework, shown in Figure 2 illustrates a pragmatic approach to process and outcome evaluation for exercise referral schemes.

This framework has been developed to reflect what might be realistic in terms of what to measure, as well as the likelihood of observing changes in outcome indicators over the course of an exercise referral scheme. The approach outlines what essential and desirable process and outcome data should be collected, taking into account the capacity of the scheme. The framework reflects the timelines that are likely to be required to observe changes in various indicators.

It is recommended that every scheme should undertake essential process and outcome evaluation at baseline, during and at the end of the referral period and collect essential outcome

data at appropriate follow-up periods after the referral period. The amount of follow-up included in the outcome evaluation should reflect the scheme's available budget and resources; however, in order to build the evidence base for exercise referral, it is strongly recommended that schemes incorporate at least six monthly follow-up data collection.

Figure 2: An evaluation framework for exercise referral schemes.

BASELINE	DURING THE SCHEME			12 WEEKS	6 MONTHS	12 MONTHS
ESSENTIAL : PROCESS + OUTCOME EVALUATION						
<u>Process</u> Participant characteristics <ul style="list-style-type: none"> • Age • Gender • Ethnicity • SES 	Service utilisation <ul style="list-style-type: none"> • Scheme uptake • Attendance rates • Adherence/drop-out 	Participant satisfaction				
<u>Outcome</u> Knowledge, attitude and skills Physical activity levels		Knowledge, attitude and skills Physical activity levels				Physical activity levels
DESIRABLE : OUTCOME EVALUATION						
Physiological outcomes Psychological well-being Disease risk					Physiological outcomes Psychological well-being	Physiological outcomes Psychological well-being Disease risk

In addition to the good practice recommendations outlined above, exercise referral schemes must also take into consideration the key monitoring and evaluation recommendations outlined in the National Quality Assurance Framework (NQAF).¹⁴

Guideline 2: all exercise referral schemes should have an integral auditing system.

Guideline 3: audited measures should include physiological factors (fitness, body fat), lifestyle behaviour (smoking and drinking habits), health professional behaviours (medication use) and psychological and social outcomes (depression, social networks); the prime focus should be on the measurement of physical activity levels (behavioural change).

Guideline 4: exercise professionals should be trained to carry out the above auditing process and ensure continuing professional development for the practitioner.

Guideline 5: measures should be participant-centred and used to motivate participants to change behaviour.

Guideline 6: audited measures should be easy to obtain during normal working practice (and with minimal additional expense) and should track long-term change (over 9 months).

Guideline 7: data should be used to identify specific determinants of adherence and long-term behaviour change.

Summary

It is essential for exercise referral schemes to keep accurate and up-to-date records regarding scheme reach and service utilisation, for example who is attending (name, address, date of birth, gender, ethnicity, and other vital information), why they are attending (i.e. reason for referral), how often they are attending, and, ideally, what they are attending (gym, exercise classes, community activities). It is also essential that schemes capture data on service delivery, for example who has referred the patient, when they were referred, when they were accepted on the scheme, when they started the scheme, and other similarly significant dates.

Wherever possible this process should be automated (e.g. with membership swipe cards) to reduce demands on exercise professionals and regularly extracted (e.g. monthly) to a useable format (e.g. spreadsheet, report). Personal information, current status within the scheme, answer to questionnaires, results of any physiological measures such as height, weight, blood pressure, fitness tests and other vital information should be recorded on a database, with each person identifiable by a unique ID, which should also be the primary key on the corresponding database.

Data should be recorded following each major consultation with the patient to allow progress to be tracked.

In addition outcome evaluation should be undertaken to determine what the scheme accomplished and whether the scheme met its aims and objectives. Any outcome assessments should be taken before and after a scheme to detect change. Short-term outcomes such as changes in attitudes are the most likely indicators to change over the course of an exercise referral scheme. Long-term tracking of participants is required to determine whether schemes are meeting long-term outcomes, for example a change in disease risk.



Evaluation Recommendations

Ensure the scheme has clearly defined aims and objectives.

Develop a logic model to demonstrate how the scheme will contribute to achieving the aims and objectives.

Develop clear evaluation questions - what do you want to know about your scheme?

Identify the resources available for evaluation and select an appropriate evaluation design.

Consider the evaluation framework and identify what will be included in your evaluation?

Ensure you have set realistic timelines to observe changes in your selected outcome indicators.

Decide how outcome indicators will be assessed - the 'tools' section of this toolkit will help.

Decide who the most appropriate person to collect the evaluation data is.

Ensure you have appropriate expertise to be able to analyse data.

Write up the results of the evaluation in a report.

Use the evaluation findings to help review and develop your scheme.

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Appendices

1. Evaluation Design
2. Logic Model
3. Natural England Outdoor Health Questionnaire
4. The Stages of Change Questionnaire
5. The Self-Efficacy for Exercise Scale
6. Seven-Day Physical Activity Recall
7. The Godin Leisure Time Exercise Questionnaire
8. SF12
9. EQ5D
10. The WHOQOL-BREF

Appendix 1 Evaluation Design

The evaluation design describes the set of procedures and tasks that need to be carried out to systematically examine the effects of a programme (Nutbeam and Bauman, 2007).

The evaluation design of a health promotion programme can be broadly grouped into 3 main types, based on the strength of evidence they provide for intervention effectiveness.

- Experimental
- Quasi-experimental
- Non-experimental

This section aims to provide a brief overview of each evaluation design and highlight the advantages and disadvantages of each approach in relation to the evaluation of exercise referral schemes.

Experimental Evaluation Design

Experimental designs are regarded as the most rigorous and scientific approach to evaluation of effectiveness and the Randomised Controlled Trial (RCT) is often considered as the 'gold standard'.

Randomised Controlled Trial (RCT)

An RCT involves assigning eligible participants at random to either an 'intervention' or a 'non intervention' group. As the assignment of groups is by chance, it is assumed that the groups are similar on all other characteristics that might effect the outcome measures of interest. RCT's are designed to have a very high level of 'internal validity' but because of the way they are conducted they may have less 'external validity' or application in the real world. Because an RCT uses random allocation it is assumed that this will minimise any differences between groups at the start of a programme and allow any observed changes in the intervention group to be attributed to the intervention and not due to 'chance effects' that have nothing to do with the programme. In other words an RCT improves the confidence that the observed changes were *caused* by the programme.

Clustered Randomised Control Trial

Cluster randomisation involves participants being allocated to either the intervention or a control condition, as a group, rather than individually. In the context of an exercise referral scheme, patients could be cluster randomised by practice. Participants referred from one practice receive the intervention and patients from another practice form the non-intervention control group. Cluster randomisation may be more practical than randomising on the individual level, and may also reduce the risk of contamination.

Quasi-experimental Evaluation Design

Quasi-experimental designs are commonly used in the evaluation of programmes when random assignment is not possible or practical. Like experimental designs, quasi-experimental designs involve comparing the changes between one group that receive the programme and a no intervention control group. The decision of who receives the programme and who doesn't is not random and is usually determined by either systematic allocation or convenience. Although it is desirable for the comparison group to be as similar as possible to the intervention group on factors which could affect the selected outcomes, for instance age and gender, this may not always happen.

In an exercise referral context, like in the cluster randomised design, participants referred from one practice could receive the intervention and patients from another practice form the non-intervention control group, however in a quasi-experimental design the choice of which practice is allocated to the intervention and to the control is not random.

Non-experimental Evaluation Design

Although non-experimental designs are used to evaluate health promotion programmes, including exercise referral schemes, these designs have the lowest level of scientific quality and the least confidence that the changes were caused by the intervention. As a result, these types of studies are often excluded from systematic reviews of evidence. This was the case with the NICE review of exercise referral schemes (NICE, 2006) and similar reviews of interventions conducted in primary care in the USA and elsewhere (U.S. Preventive Services Task Force).

A non-experimental design does not involve a control group and therefore provides limited evidence that the observed changes were due to the intervention or programme and not due to other influences.

Which Evaluation Design Should I Use?

This table illustrates some of the advantages and disadvantages of different evaluation designs in relation to exercise referral schemes.

Evaluation Design	Advantages	Disadvantages
Experimental	Provides the strongest level of confidence that observed outcomes are a result of the intervention	<p>Requires a control group who would not receive the exercise referral intervention</p> <p>Delaying or denying access to a programme requires ethical approval</p> <p>Likely to require specialist expertise to set up and oversee evaluation design, specifically random allocation, maintain quality control of intervention, and avoid contamination of the control group</p> <p>Difficult to control all the variables which may influence programme outcomes</p> <p>Requires a larger budget</p>
Quasi-experimental	The context and way in which the intervention or programme is delivered is often more natural or more similar to 'usual practice' than in an RCT, meaning the results may be more generalisable to other schemes/settings	The comparison group may differ considerably from the intervention group at the outset, making the interpretation of results problematic
Non-experimental	<p>Lends itself to the evaluation of the 'real-life' situation</p> <p>More feasible to implement in the context of exercise referral schemes</p>	<p>Does not provide compelling evidence that the intervention <i>caused</i> the observed changes</p> <p>Findings may not be generalisable to other exercise referral schemes</p>

Appendix 3 Outdoor Health Questionnaire

Outdoor Health Questionnaire (OHQ)

Walking the way to Health



ID Number: Name of Scheme:

A. Participant Details

Full name:

House number/name and street:

City / County: Postcode:

Tel no: E-mail:

Please provide the name and telephone number of someone who can be contacted in an emergency:

B. Health Screening

For most people, physical activity does not pose a hazard. The questions below have been designed, however, to identify the small number of people for whom it would be wise to have medical advice before starting:

<p>1. Has your doctor ever said you have a heart condition? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>2. Do you feel pain in your chest when you do physical activity? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>3. Do you ever lose balance because of dizziness or ever lose consciousness? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	<p>4. In the past month, have you had pain in your chest when you were NOT doing physical activity? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>5. Do you have a bone or joint problem that could be made worse by a change in your physical activity? Yes <input type="checkbox"/> No <input type="checkbox"/></p>
--	---

Declaration

I understand that if I have answered 'Yes' to one or more of the above questions, I should seek medical advice before attending a walking programme. I agree to tell the walk leaders if there is a change in my medical condition. I understand that this information will be shared with other walk leaders and that I walk at my own risk.

Signed: _____ Date: _____

To make the case for your walking schemes, please help us by answering the following questions:

<p>6. Have you been diagnosed by your doctor or health professional with any of the five following medical conditions?</p> <p><input type="checkbox"/> Heart disease</p> <p><input type="checkbox"/> High Blood Pressure</p> <p><input type="checkbox"/> COPD (Emphysema and Chronic Bronchitis)</p> <p><input type="checkbox"/> Diabetes</p> <p><input type="checkbox"/> Asthma</p>	<p>7. Do you have a long-standing (ie: for more than 12 months and likely to continue) illness or disability which affects (or limits) your day to day activities? Yes <input type="checkbox"/> No <input type="checkbox"/> Prefer not to say <input type="checkbox"/></p> <p>If Yes, please give brief details:</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
--	--

Please advise the walk leader if you have any other conditions you feel they might need to know of.

C. About You

1. New Walker? Existing Walker? Returning Walker?
(not walked for 3 months or more)
2. Are you a trained volunteer walk leader? Yes No
3. Have you been recommended by your doctor or health professional to come on this scheme? Yes No
4. In the past week, on how many days have you accumulated at least 30 minutes of moderate intensity physical activity such as brisk walking, cycling, sport, exercise, and active recreation? (Do not include physical activity that may be part of your job or usual role activities.)
- 0 1 2 3 4 5 6 7

Because WHI is a public service, we have to report the following information to the Office of National Statistics. Please help us! 😊

5. Age: 16-24 25-34 35-44 45-54 55-64 65-74 75-84 85+
6. Gender: Male Female
7. Ethnicity:
- | | | |
|--|---|--|
| <input type="checkbox"/> White/British | <input type="checkbox"/> Mixed/Other Mixed | <input type="checkbox"/> Black or Black British/African |
| <input type="checkbox"/> White/Irish | <input type="checkbox"/> Asian or Asian British/Indian | <input type="checkbox"/> Black or Black British/Other Black |
| <input type="checkbox"/> White/Other | <input type="checkbox"/> Asian or Asian British/Pakistani | <input type="checkbox"/> Chinese or other ethnic group/Chinese |
| <input type="checkbox"/> Mixed/White & Black Caribbean | <input type="checkbox"/> Asian or Asian British/Bangladeshi | <input type="checkbox"/> Chinese or other ethnic group/Other |
| <input type="checkbox"/> Mixed/White & Black African | <input type="checkbox"/> Asian or Asian British/Other Asian | <input type="checkbox"/> Other (please specify) |
| <input type="checkbox"/> Mixed/White & Asian | <input type="checkbox"/> Black or Black British/Caribbean | <input type="text"/> |
8. Thank you for completing this questionnaire. Are you happy to be contacted to help us evaluate health walks? Yes No

Using and sharing your information

Your information will be held by Natural England, in accordance with the Data Protection Act 1998. It will be used by each local scheme to evaluate their health walks and show funders that they offer value for money. Summary information will also be used by Natural England to further its work on safeguarding and promoting the use of the natural environment to improve the health of the population. The information will be collected by walk leaders, passed on to walk coordinators for inputting into a central database from which anonymous reports will be drawn for both the local scheme and the national programme. The results of any analysis will be used to influence and support further funding bids for the local and national schemes and to make the case of the health value of the natural environment.

I have read and understood the above statement.

Signed: _____ Date: _____



Appendix 4 The Stages of Change Questionnaire

Physical activity includes activities such as brisk walking, jogging, cycling, swimming, or any other activity, such as gardening, in which the exertion makes you feel warmer or slightly out of breath.

	No	Yes
1. I am currently physically active	0	1
2. I intend to become more physically active in the next 6 months	0	1

For activity to be *regular*, it must add up to a *total* of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks.

	No	Yes
3. I currently engage in regular physical activity	0	1
4. I have been regularly physically active for the past 6 months	0	1

Scoring Algorithm

If (question 1 = 0 and question 2 = 0) then you are at stage 1.

If (question 1 = 0 and question 2 = 1) then you are at stage 2.

If (question 1 = 1 and question 3 = 0) then you are at stage 3.

If (question 1 = 1, question 3 = 1, and question 4 = 0) then you are at stage 4.

If (question 1 = 1, question 3 = 1, and question 4 = 1) then you are at stage 5.



Appendix 5 The Self-Efficacy for Exercise Scale

How confident are you right now that you could exercise 3 times per week for 20 minutes if:

	Not Confident																		Very Confident
1. You were worried the exercise would cause further pain	0	1	2	3	4	5	6	7	8	9	10								
2. You were bored by the program or activity	0	1	2	3	4	5	6	7	8	9	10								
3. You were not sure exactly what exercises to do	0	1	2	3	4	5	6	7	8	9	10								
4. You had to exercise alone	0	1	2	3	4	5	6	7	8	9	10								
5. You did not enjoy it	0	1	2	3	4	5	6	7	8	9	10								
6. You were too busy with other activities	0	1	2	3	4	5	6	7	8	9	10								
7. You felt tired during or after exercise	0	1	2	3	4	5	6	7	8	9	10								
8. You felt stressed	0	1	2	3	4	5	6	7	8	9	10								
9. You felt depressed	0	1	2	3	4	5	6	7	8	9	10								
10. You were afraid the exercise would make you fall	0	1	2	3	4	5	6	7	8	9	10								
11. You felt pain when exercising	0	1	2	3	4	5	6	7	8	9	10								

Appendix 6 Seven-Day Physical Activity Recall

7-Day Physical Activity Recall SSN

PAR#: 1 2 3 4 5 6 7 Participant _____

Interviewer _____ Today is _____ Today's Date, _____

1. Were you employed in the last seven days? 0. No (Skip to Q#4) 1. Yes

2. How many days of the last seven did you work? ___ days

3. How many total hours did you work in the last seven days? . . hours last week

4. What two days do you consider your weekend days? _____
(mark days below with a squiggle)

WORKSHEET **DAYS**

SLEEP		1	2	3	4	5	6	7
M O R N I N G	Moderate							
	Hard							
	Very Hard							
A F T E R N O O N	Moderate							
	Hard							
	Very Hard							
E V E N I N G	Moderate							
	Hard							
	Very Hard							
Total Min Per Day	Strength:	_____	_____	_____	_____	_____	_____	_____
	Flexibility:	_____	_____	_____	_____	_____	_____	_____

<p>4a. Compared to your physical activity over the past 3 months, was last week's physical activity more, less, or about the same?</p> <p>1. More 2. Less 3. About the same</p>	<p>6. Do you think this was a valid PAR interview?</p> <p>1. Yes 0. No If NO, go to the back and explain.</p>
<p>5. Were there any problems with the PAR interview?</p> <p>0. No 1. Yes If YES, go to the back and explain.</p>	<p>7. Were there any special circumstances concerning this PAR ?</p> <p>0. No 1. Yes, If YES, what were they?(circle)</p> <p>1. Injury all week 2. Illness all week 3. Illness part week 4. Injury part week 5. Pregnancy 6. Other:</p>

Appendix 7 The Godin Leisure Time Exercise Questionnaire

INSTRUCTIONS

In this excerpt from the Godin Leisure-Time Exercise Questionnaire, the individual is asked to complete a self-explanatory, brief four-item query of usual leisure-time exercise habits.

CALCULATIONS

For the first question, weekly frequencies of strenuous, moderate, and light activities are multiplied by nine, five, and three, respectively. Total weekly leisure activity is calculated in arbitrary units by summing the products of the separate components, as shown in the following formula:

$$\text{Weekly leisure activity score} = (9 \times \text{Strenuous}) + (5 \times \text{Moderate}) + (3 \times \text{Light})$$

The second question is used to calculate the frequency of weekly leisure-time activities pursued "long enough to work up a sweat" (see questionnaire).

EXAMPLE: Strenuous = 3 times/wk + Moderate = 6 times/wk + Light = 14 times/wk

$$\text{Total leisure activity score} = (9 \times 3) + (5 \times 6) + (3 \times 14) = 27 + 30 + 42 = 99$$

During a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

STRENUOUS EXERCISE

(HEART BEATS RAPIDLY)

(e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

Times Per Week

MODERATE EXERCISE

(NOT EXHAUSTING)

(e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

**MILD EXERCISE
(MINIMAL EFFORT**

(e.g. , yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-moiling, easy walking)

During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular physical activity long enough to work up a sweat (heart beats rapidly)?

OFTEN

1.

SOMETIMES

2.

NEVER/RARELY

3.

Appendix 8 The SF12

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. *Thank you for completing this survey!*

For each of the following questions, please mark an in the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

Yes, limited a lot	Yes, limited a little	No, not limited at all
▼	▼	▼

- a. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf..... 1 2 3
- b. Climbing several flights of stairs 1 2 3

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3. During the past 4 weeks, how much of the time have you had any of the result of your physical health?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼

- a Accomplished less than you would like 1 2 3 4 5
- b Were limited in the kind of work or other activities..... 1 2 3 4 5

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼

- a Accomplished less than you would like 1 2 3 4 5
- b Did work or other activities less carefully than usual 1 2 3 4 5

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
▼	▼	▼	▼	▼
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

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6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
a. Have you felt calm and peaceful?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
b. Did you have a lot of energy?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
c. Have you felt downhearted and depressed?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Thank you for completing these questions!

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Appendix 9 The EQ-5D

By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

Mobility

- I have no problems in walking about
- I have some problems in walking about
- I am confined to bed

Self-Care

- I have no problems with self-care
- I have some problems washing or dressing myself
- I am unable to wash or dress myself

Usual Activities (*e.g. work, study, housework, family or leisure activities*)

- I have no problems with performing my usual activities
- I have some problems with performing my usual activities
- I am unable to perform my usual activities

Pain/Discomfort

- I have no pain or discomfort
- I have moderate pain or discomfort
- I have extreme pain or discomfort

Anxiety/Depression

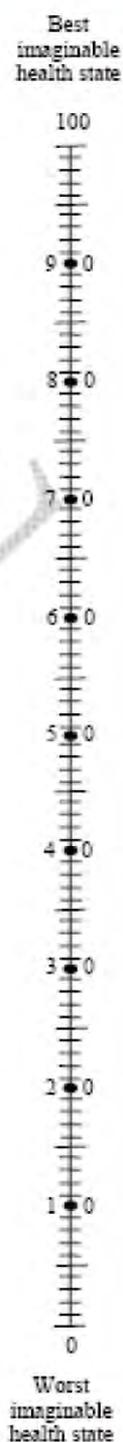
- I am not anxious or depressed
- I am moderately anxious or depressed
- I am extremely anxious or depressed



To help people say how good or bad a health state is, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0.

We would like you to indicate on this scale how good or bad your own health is today, in your opinion. Please do this by drawing a line from the box below to whichever point on the scale indicates how good or bad your health state is today.

**Your own
health state
today**



Appendix 10 The WHOQOL-BREFⁱⁱⁱ

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

ⁱⁱⁱ World Health Organization (1993). WHOQoL Study Protocol. WHO (MNH7PSF/93.9)

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5

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