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# **The General Practice Physical Activity Questionnaire (GPPAQ)**

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## Introduction

The Chief Medical Officer's report *At least five a week* published in 2004 set out the important general health benefits associated with physical activity. Increasing activity levels can contribute to the prevention and management of over 20 conditions and diseases, including coronary heart disease, diabetes, cancer, positive mental health and to ongoing weight management. Cardiovascular disease (including heart disease and stroke) and cancer are the major causes of death in England, together accounting for almost 60% of premature deaths.

Inactive and unfit people have almost double the risk of dying from coronary heart disease, against which physical activity is an independent protective factor. Increasing activity levels also has beneficial effects on musculoskeletal health, reducing the risk of osteoporosis, back pain and osteoarthritis. However, physical activity as part of our everyday lives has been in overall decline; not least as a result of changes in the levels and the nature of manual work and active travel.

### *Recommendations for active living throughout the lifecourse*

For general health benefits, adults should achieve a total of at least 30 minutes a day of at least moderate intensity physical activity on 5 or more days of the week. The recommended levels of activity can be achieved either by doing all the daily activity in one session, or through several shorter bouts of activity of 10 minutes or more. The activity can be lifestyle activity\* or structured exercise or sport, or a combination of these.

\*Lifestyle activity means activities that are performed as part of everyday life, such as climbing stairs or brisk walking.

In 2002 the Department of Health commissioned researchers from the London School of Hygiene & Tropical Medicine to produce a short measure of physical activity, which could be used in routine general practice to assist Primary Care Trusts to meet the National Service Framework recommendations that primary care teams assess and record the modifiable risk factors for each of their patients, including physical activity.

More recently, the Public Health White Paper *Choosing health, Making healthier choices easier* reiterated the commitment to develop a patient activity questionnaire to support NHS staff and others to understand their patients' levels of physical activity.

NICE Public Health Intervention Guidance published in March 2006 recommended that 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). Practitioners 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 general practitioner physical activity questionnaire (GPPAQ), to identify inactive individuals.

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## 1. Intended Purpose

The General Practice Physical Activity Questionnaire is intended for use in adults (16 – 74) years in routine general practice to provide a simple, 4-level Physical Activity Index (PAI) reflecting an individual's current physical activity. The index can be cross-referred to Read codes for physical activity and can be used to help inform the decision as to when interventions to increase physical activity might be appropriate.

## 2. Resources

The General Practice Physical Activity Questionnaire comprises:

- A written questionnaire for completion by patients
- Electronic template of the questionnaire
- Coding algorithm (See Appendix A)

The electronic template of the questionnaire incorporates the coding algorithm and can be saved as a separate file for each patient.

Please note that the coding algorithm is an integral part of the questionnaire. Any unauthorised modification to the coding algorithm is likely to negate the validation of the questionnaire.

## 3. Instructions for use

The General Practice Physical Activity Questionnaire is designed for self-completion by patients. It takes approximately 30 seconds to fill in and therefore can be completed by patients while waiting for appointments or during a consultation.

### 3.1 Who should complete the GPPAQ?

Physical inactivity is a major public health problem and therefore screening for physical inactivity in all adults is, in general, appropriate. The GPPAQ was evaluated for use in patients aged 16-74 years who were free from longstanding illness or disability that prevented them from engaging in a physically active lifestyle. The evaluation was conducted on patients attending for routine consultations with a doctor or nurse and new registrations.

All patients waiting for any such appointments can be given the GPPAQ by reception staff to complete just prior to the appointment. The responses to each of the three questions can be transferred simply to the electronic template of GPPAQ, which will automatically assign a Physical Activity Index as well as the appropriate Read Code. The whole process can be completed in 1-2 minutes.

### 3.2 Who should not complete the GPPAQ?

The GPPAQ was not evaluated for use in children and young people (aged <16 years) or adults older than 74 years. Both groups may require age-specific physical activity assessments.

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The GPPAQ may be used in other circumstances, such as diabetic or hypertensive clinics, or with other medical conditions where physical activity may be appropriate in the management of the condition (see Chief Medical Officer's Report on Physical Activity and Health, DH 2004). Decisions to use the GPPAQ in circumstances other than those used in the evaluation should be made locally.

### 3.3 How frequently should GPPAQ be used?

The level of physical activity should be entered on the clinical record for all patients over the age of sixteen and should be updated at least every five years<sup>1</sup>. For patients with clinical evidence of occlusive arterial disease and those whose risk of CHD events is greater than 30% over ten years, physical activity levels should be recorded annually.

### 3.4 When not to use the GPPAQ

The GPPAQ is designed as a simple tool for ranking a patient's physical activity and in particular for identifying patients who would benefit from increased physical activity and are therefore eligible for intervention. The GPPAQ has not been designed for use as a research tool to measure self-reported physical activity before and after interventions, and therefore is not appropriate for measuring the effectiveness of physical activity interventions.

### 3.5 Assigning Read Codes

The following table may be used to relate the PAI to commonly-used Read Codes for physical activity.

Table 1. Physical Activity Categories – Mapping PAI to Read codes

<b>Label</b>	<b>Read Code</b>	<b>PAI (Derived from GPPAQ)</b>
Exercise physically impossible	1381	
Avoids even trivial exercise	1382	<b>Inactive</b>
Enjoys light exercise	1383	<b>Moderately inactive</b>
Enjoys moderate exercise	1384	<b>Moderately active</b>
Enjoys heavy exercise	1385	<b>Active</b>

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<sup>1</sup> Department of Health (2000). National Service Framework for Coronary Heart Disease. London: Department of Health, Chapter 2, Appendix A

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### **3.6 Limitations of GPPAQ**

GPPAQ was developed to provide a simple, 4-level Physical Activity Index (PAI) reflecting an individual's current physical activity, for use in general practice to decide when interventions to increase physical activity might be appropriate. Questions concerning walking, housework/childcare and gardening/DIY have been included, however they have not been shown to yield data of a sufficient reliability to contribute to an objective assessment of overall physical activity levels and are not included in the calculation of the PAI.

Nevertheless, these activities can contribute to meeting the Chief Medical Officer's recommendation and walking, in particular, should be encouraged. The PAI must therefore be used in conjunction with a discussion of the responses to the walking, housework/childcare and gardening/DIY questions in order to determine whether the patient is currently meeting the Chief Medical Officer's recommendation for 30 minutes of moderate activity on 5 days of the week (or more).

#### 4. Discussion of action following screening for physical inactivity

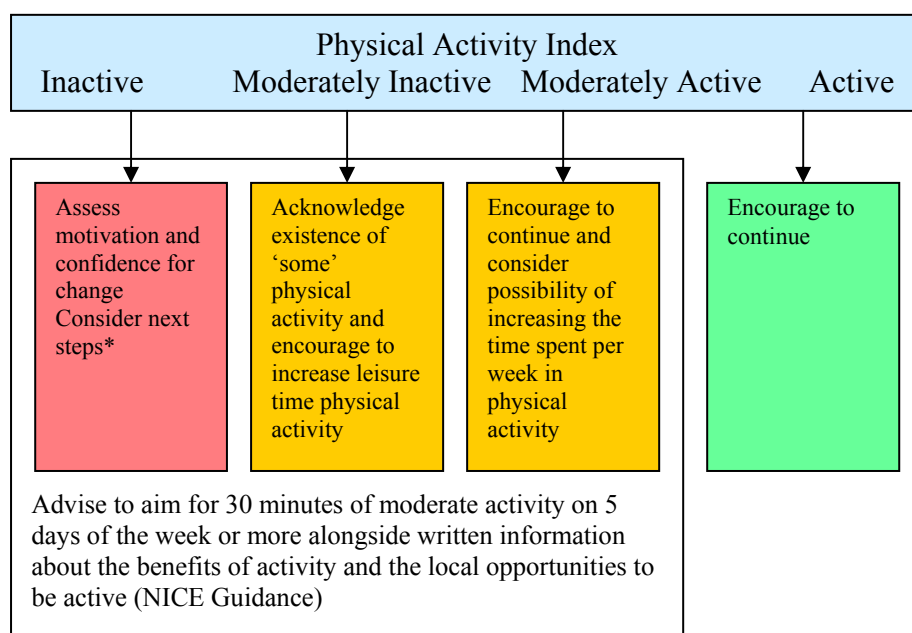
The group with most to gain from an increase in physical activity are those with a PAI of 1, i.e. the 'Inactive', but the 'Moderately Inactive' and 'Moderately Active' groups should also receive advice to aim for 30 minutes of moderate activity on 5 days of the week (or more). The 'Active' group should receive a degree of verbal reinforcement that reflects their current level of physical activity and should be encouraged to either make small increases to their physical activity or continue with their current level.

As indicated in Figure 1 below, the focus of any further intervention should be on those who are 'inactive'. This *might* take the form of a brief, verbal intervention.

Note: Any intervention should be consistent with the agenda on patient led consultations and choice. One way to do this is to base behaviour-change negotiations on the principles of motivational interviewing (MI). Although developed in the field of addictions, brief versions of MI have been adapted and applied to a wide variety of behaviours and conditions such as smoking, diet, physical activity, medical adherence and diabetes, with evidence of effectiveness (Resnicow et al., 2002; Rollnick, 1999, Rubak, 2005).

Below, an example is offered of a brief verbal intervention for Inactive patients based on the principles of MI.

Figure 1. Next steps following screening for inactivity



\* See example dialogue below

##### 4.1 Example Dialogue for Inactive Patients

Ask your patient,

“On a scale from 0 to 10, where 0 is not motivated at all, and 10 is extremely motivated, how motivated would you say you are right now to increase your physical activity?” (Make a mental note of the value).

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‘If you were to decide to increase your physical activity, how confident are you that you would succeed? If, on a scale of 0 to 10, 0 means that you are not at all confident and 10 means that you are 100% confident you could become more active. What number would you give yourself now?’

(Make a mental note of the value).

Then ask your patient a second scaling question,

“For motivation to change why are you at a —— (the number the patient gave) and not 0?” The answer to this question is the patient’s motives/reasons for change.

Next ask,

“And for confidence to change why are you at a —— (the number the patient gave) and not 0?”

The answer to this question is the patient’s “self-efficacy,” the positive reasons why change seems possible.

Finally, provide the patient with a brief summary of what you heard and then ask,

“What do you think the next step is for you?”

A common response is for the patient to say they don’t know or are uncertain. If they do, follow with,

“Let’s list what the options are at the moment. You could.

Stay as you are and do nothing;

Start to increase the amount of physical activity that you do;

Use a loan pedometer for  $x$  weeks so that we could take a closer look at your physical activity;

Consider a further appointment to discuss things in more detail with the nurse/exercise specialist;

Consider joining a community exercise programme, group or sports club from this list.

What do you make of these?”

The options can be altered to reflect local provision and opportunities in the community.

In just a few minutes it is possible to encourage the patient to consider why and how they might change their physical activity without feeling as if they are being pushed or coerced into something they are not ready for.

(Dialogue based on Rollnick et al, 1997; Miller, 2005; Rollnick et al, 2005)



## 5. 'Inactive' Patients who self-report 3 hours or more per week of walking

Patients who fall within the inactive category, but claim to undertake significant amounts of walking may require a modified, brief intervention that probes their understanding of walking and walking pace and the basis upon which they have declared the amount of walking accumulated during the last week. For those patients who remain confident that they achieve the recommended levels of physical activity by virtue of their walking intensity and duration, encourage them to continue. The example dialogue given for Inactive patients could be prefaced with the following:

“You say you do three hours or more of walking per week. So that I might better understand how walking fits into your day, perhaps you could talk me through a typical day for you, starting from when you get up in the morning right through to when you go to bed telling me where walking fits in. How about yesterday, could you talk me through yesterday?”

If the patient insists the previous day was atypical, use the day before that. Try to avoid going too far back as the accuracy of recall will be diminished. The practitioner's task in this exercise is simply to listen, without offering any judgement of what is being said. This is not further assessment of the patient's activity. The aim is to get the patient talking about their current behaviour in a non-threatening (the threat of being told to change) environment that will build rapport and conveys to the patient that the practitioner listens and is genuinely interested in their situation.

Once the patient has completed the description of their day the practitioner should simply summarise the information on walking and then proceed to the motivation and confidence questions described above, as appropriate.

## APPENDIX A - Calculating the 4-level PAI

Patients can be classified into four categories based on the original EPIC index from which the GPPAQ was developed.

Inactive	Sedentary job and no physical exercise or cycling
Moderately inactive	Sedentary job and some but < 1 hour physical exercise and / or cycling per week OR Standing job and no physical exercise or cycling
Moderately active	Sedentary job and 1-2.9 hours physical exercise and / or cycling per week OR Standing job and some but < 1 hour physical exercise and / or cycling per week OR Physical job and no physical exercise or cycling
Active	Sedentary job and $\geq 3$ hours physical exercise and / or cycling per week OR Standing job and 1-2.9 hours physical exercise and / or cycling per week OR Physical job and some but < 1 hour physical exercise and / or cycling per week OR Heavy manual job

Note: Questions concerning Housework/Childcare and Gardening/DIY have been included to allow patients to record their physical activity in these categories, however these questions have not been shown to yield data of a sufficient reliability to contribute to an understanding of overall physical activity levels. Further, the health benefits of exercise derived from these types of domestic activities is unclear.

Similar considerations around data quality also pertain to walking, however self-reported walking levels can be verified using pedometers and many community-based interventions encourage walking. **It is therefore recommended that the responses to questions 2c and 3 be carried forward to any discussion of the PAI with the patient.**

Table 2. Summary of the PAI

Physical exercise and / or cycling (hr/wk)	Occupation			
	Sedentary	Standing	Physical	Heavy Manual
0	Inactive	Moderately Inactive	Moderately Active	Active
Some but < 1	Moderately Inactive	Moderately Active	Active	Active
1-2.9	Moderately Active	Active	Active	Active
≥ 3	Active	Active	Active	Active

Table 3. Combining responses for physical exercise and cycling

Cycling \ Physical Exercise	0	Some but < 1	1-2.9	≥3
0	0	Some but < 1	1-2.9	≥3
Some but < 1	Some but < 1	Some but < 1	≥3	≥3
1-2.9	1-2.9	≥3	≥3	≥3
≥3	≥3	≥3	≥3	≥3

## **APPENDIX B - Technical Background and Evaluation**

In 2002 the Department of Health commissioned researchers from the London School of Hygiene & Tropical Medicine to produce a short measure of physical activity

The measure was intended for use in routine general practice and its purpose was to provide a simple 4-level Physical Activity Index (PAI) reflecting an individual's current physical activity. The index would be used to decide when interventions to increase physical activity might be appropriate. A working title for the measure was the General Practice Physical Activity Questionnaire (GPPAQ).

After reviewing the literature and consultation with experts, performance requirements for the GPPAQ were agreed. These were that:

- The method of completion should be self explanatory
- It should be designed for use by adults aged 18-74 years (later revised to 16-74 years)
- It should be possible for respondents to complete the questionnaire without assistance
- It should take less than one minute to complete
- Individual physical activity categories should be simple, requiring limited computation
- The physical activity categories should allow for the assignment of a physical activity Read Code
- The output of the questionnaire should enable practice staff to make a decision on whether the patient concerned should be advised to be more active or whether more detailed assessment was required

Although no existing self-report measure of physical activity had specifically been developed for routine general practice, a short physical activity questionnaire used in the European Prospective Investigation into Cancer (EPIC) met many of the criteria and a simple index of physical activity could be derived. It had established acceptable levels of repeatability and validity in a sample of English adults aged 40-65 years (Wareham et al, 2002). It was decided that this short questionnaire should form the basis of the new measure.

A pilot study was conducted in three general practices, with practice nurses administering the self-completion of GPPAQ to 61 patients from a variety of newly registered patients, including a number of patients for whom English was not the first language. The GPPAQ was well received by nurses, patients and general practitioners. Practitioners welcomed a simple and efficient way of assessing physical activity. In particular, they were keen to have a standardised way of assigning Read Codes for physical activity. The patients did not experience any problems in completing the questionnaire, even when English was not the first language.

The pilot study was limited to new registration appointments, but most practitioners suggested other possible uses for the GPPAQ, including hypertension and diabetes clinics.

Due to the positive findings of the pilot study, a further study was conducted to examine how reliable and accurate the GPPAQ was in routine general practice. Four surgeries were recruited in Coventry, West Midlands. Table 2 summarises the surgeries:

Table 2. Summary of study surgeries

Practice 1	Registered patients	Number of GPs	Patient Characteristics
1	10,600	6	Mixed income 70% white Low income
2	-	-	Mainly white Middle income
3	11,500	6	Mainly white Low income
4	-	-	50% white Mixed income
5	14,400	9	70% white Mixed income
6	6450	3	Mainly white

NB. Practices 1 and 2 have two locations, as do Practices 3 and 4.

A Research Fellow (RF) of the University of Warwick recruited patients in the waiting rooms of the four surgeries. The timing of recruiting visits to the surgeries was varied. The routine nature of the recruitment meant that study participants were those who normally attend general practice. A total of 334 participants successfully completed the GPPAQ and a total of 258 participants completed it again a week later. The PAI category allocated to each individual, resulting from the completion of the second GPPAQ, was compared with allocation to a physical activity category resulting from analysis of activity recorded for the same individual during the preceding week using an Actigraph motion sensor. Demographic characteristics of participants who completed the first GPPAQ are summarised in Table 2.

Table 3. Participant characteristics

	N	%
Gender*		
Male	109	32.8
Female	223	67.2
Age group*		
18-24	22	6.6
25-34	61	18.4
35-44	67	20.2
45-54	74	22.3
55-64	65	19.6
65-74	43	13.0
Ethnic group*		
White	308	92.8
Non-white	24	7.2
Body Mass Index (BMI)*		
<25	143	43.5
≥25 to < 30	120	36.5
≥30	66	20.1

\*Excludes missing data

Following the completion of the study the following conclusions can be drawn:

- The GPPAQ has good face validity and is acceptable for use in routine general practice;
- The GPPAQ has good construct validity- that is the PAI derived from the questionnaire has the relationship with other measures that we might expect ;
- The GPPAQ is repeatable - that is a person who had high physical activity on time 1 tended to have high physical activity on time 2.
- The PAI derived from the GPPAQ is taken from the original EPIC study which has published criterion validity with positive associations with both daytime energy expenditure and cardiorespiratory fitness.
- The PAI derived from the original EPIC questionnaire predicts all-cause and cardiovascular mortality in men and women. The combination of work and leisure time physical activity into a single index are more consistently associated with mortality than either components used alone (Khaw et al, Int J Epidemiol, 2006)
- The GPPAQ is a simple and ‘quick to administer’ instrument for assessing physical activity in routine general practice. The 4-level PAI derived from the GPPAQ is suitable for ranking an individual’s physical activity for the purpose of determining the need for intervention or more detailed assessment and can be correlated to the existing Read Codes for physical activity.

## APPENDIX C - References

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