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Why older people do not participate in leisure time physical activity: a survey of activity levels, beliefs and deterrents

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Abstract

Background: regular physical activity has been shown to have many health benefits. However, many older people are physically inactive.
Objective: to investigate why older people are reluctant to participate in leisure time physical activity and to identify strategies to encourage increased activity.
Design: cross-sectional survey.
Setting: 16 general practices in Dundee, Scotland.
Methods: 409 randomly selected older people (65–84 years) who lived independently were interviewed at home. Forty-six percent of those invited to take part were recruited into the study.
Results: levels of knowledge about the specific health benefits of physical activity were high. Almost all participants (95%) believed that physical activity was beneficial and 79% believed that they did enough to keep healthy. However, 36% did no leisure time physical activity and a further 17% did less than 2 hours per week. Regression modelling identified 11 factors that exerted significant independent effects on levels of leisure time physical activity. The most powerful deterrent was lack of interest (OR = 7.8). Other factors included lack of daily access to a car, shortness of breath, joint pain, dislike of going out alone or in the evening, perceived lack of fitness, lack of energy, doubting that exercise can lengthen life, not belonging to a group and doubting that meeting new people is beneficial.
Conclusions: increasing leisure time physical activities poses major challenges. Beliefs about desirable levels of activity in older people would need to be changed. Action would be needed to relieve physical symptoms and address fears about perceived ability to undertake physical activity. Finally, easily accessible facilities would be needed to encourage participation in physical activity.

Keywords: *physical activity, sedentary, health beliefs, elderly*

Background

Regular physical activity has been shown to have many health benefits in all age groups. The benefits for older people include improved fitness and quality of life [1], prevention of osteoporosis [2] and a reduction in the risk of falling [3]. Physical activity also reduces deaths from cardiovascular disease [4] and can improve cardiovascular risk profile [5]. Maintaining health and fitness into old age is a public health priority [6]. However, despite the benefits of physical activity, many older people are much less active than desired [7–10].

Many previous attempts to encourage physical activity have focussed on exercise training, often in formal classes

using resistance training or aerobic exercise [11–13]. Recruitment rates are often low and those who take part tend to be healthy and interested in physical activity [11]. In addition, attrition rates during the intervention period are often high [14] and continuation of the physical activity beyond the period of intervention is low [12]. Most older people undertake essential physical activities such as housework or walking to the shops and post office [15]. Engaging in regular leisure time physical activity is an ideal way to increase or maintain levels of physical activity during retirement. The aim of this study was to investigate older people's intentions about pursuing leisure time activities, the perceived barriers to physical activity as well as factors that would encourage increased physical activity.

Methods

Identification of patients

Participants were identified and recruited through age/sex registers from 16 general practices in Dundee, Scotland. Older people suitable for inclusion were randomly selected from lists stratified by sex, age (65–74 years and 75–84 years) and deprivation index (low, medium, or high deprivation score) [16]. A total of 1,064 patients were identified. One hundred patients were excluded (terminal illness, dementia or living in a nursing home or residential home) and 20 could not be traced. Nine hundred and forty four patients were therefore invited to take part in the study. Of these, 57 were excluded at initial contact because they were unsuitable (e.g. admission to hospital, recent bereavement, frailty, language barrier). Four hundred and nine patients agreed to be interviewed (46% of those suitable for inclusion).

Patients were invited to take part in the study by their own general practitioner. A research nurse interviewed participants in their own homes. The Tayside Committee on Medical Research Ethics approved the study.

Data collected

A questionnaire was developed that drew on the Theory of Planned Behaviour [17], the London Health and Fitness Questionnaire [18], and the findings from five focus groups and four in-depth interviews (details available from authors). The final questionnaire included sections on current health and fitness, levels of physical activity (housework, gardening, purposeful walking and leisure time activity) and non-physical leisure time activities. Participants were asked to give details on light housework (dusting, preparing food, washing dishes) in hours per day and heavy housework (vacuuming, washing windows, ironing) in hours per week. Details of light gardening (weeding, planting) and heavy gardening (mowing the lawn, digging) were given in hours per week during the summer months. Physical symptoms may affect levels of physical activity. Participants were therefore asked whether they suffered from painful joints or from lack of energy. In addition they were asked whether they experienced chest tightness or breathlessness when physically active. Questions on beliefs, attitudes and intention to be physically active were on a Likert Scale. Questions on demography, health status, knowledge, current and past activities were closed questions. The questionnaire was administered by interview and took approximately 1½ hours to complete.

Statistical methods

Data were analysed using SPSS for Windows. Logistic regression was used to assess the relative importance of variables that predicted levels of leisure time physical activity. Activity level was grouped by those who did not participate in any leisure time physical activity ($n = 148$) and those who did ($n = 261$). The variables were coded such that an increased odds ratio indicates an increased likelihood of inactivity. Fifty-one factors that were thought to influence physical activity levels were grouped into eight categories: personal details, lifestyle, perceived physical ability, beliefs about the benefits of physical activity, general health beliefs, deterrents to going out, physical symptoms and social influences. Each category contained up to 10 items. Logistic regression was initially used to determine which variables were statistically significant in univariate analysis. The factors that were significant in univariate analysis were then fitted into a model within their category using forward selection. Finally the variables that were statistically significant in the model for the categories were entered into an overall model, again using forward selection.

Results

Demography

Of the 409 participants, 212 (52%) were male. One hundred and twenty seven participants (31%) were aged 65–69 years, 109 (27%) were 70–74 years, 106 (26%) were 75–79 years and 67 (16%) were 80–84 years of age. Almost half (42%) of the study population lived alone. One hundred and eighty six (45%) lived in areas of low deprivation, 145 (35%) in areas of medium deprivation and 78 (19%) in areas of high deprivation.

The characteristics of the 478 people who refused to take part in the study were investigated to determine whether they differed from those recruited. Those who refused included a higher percentage of people over 75 years (51% of the refusers were over 75 years compared with 41% of those who took part). The refusers also included a greater proportion of women (55% *versus* 48% among participants). Finally, a higher proportion of those who lived in areas of high deprivation refused to take part (27% *versus* 19%).

Levels of knowledge about the specific health benefits from participating in physical activity were high (Table 1). Almost all of the participants thought that physical activity helps to keep you supple ($n = 395$, 97%) and can improve your health ($n = 392$, 96%). Only a minority of participants gave the incorrect responses that physical activity can lead to long-term hypertension ($n = 62$, 15%) and/or can weaken your bones ($n = 51$, 13%), although others were unsure of the effects on blood pressure ($n = 121$, 30%) or bone strength ($n = 87$, 21%). A large majority had strongly held beliefs about the potential benefits to their personal health if they remained physically active (Table 2). Almost 90%

Table 1. Knowledge about the specific health benefits of physical activity

	N (%) in agreement	N (%) who disagreed	N (%) unsure
Regular physical activity can help to prevent heart disease	354 (87)	13 (3)	42 (10)
Regular physical activity can help to improve your health	392 (96)	7 (2)	10 (2)
Regular physical activity can lengthen your life	294 (72)	28 (7)	87 (21)
Regular physical activity can keep you supple	395 (97)	5 (1)	9 (2)
Regular physical activity can weaken your bones	51 (13)	271 (66)	87 (21)
Regular physical activity can give you high blood pressure	62 (15)	226 (55)	121 (30)

Table 2. Beliefs about the personal benefits of physical activity

	N (%) in agreement	N (%) who disagreed	N (%) unsure
Regular physical activity does/would help me to improve/maintain my physical fitness	353 (88)	7 (2)	42 (10)
Regular physical activity does/would help to increase/maintain my levels of energy	335 (84)	9 (2)	57 (14)
Regular physical activity does/would help me to feel better	355 (89)	7 (2)	38 (9)
Regular physical activity does/would help me to improve my mental health	317 (79)	19 (5)	64 (16)
Regular physical activity does/would help to increase/maintain my muscle strength and tone	345 (86)	7 (2)	47 (12)
Regular physical activity does/would help to reduce/prevent aches and pains	252 (63)	37 (9)	110 (28)
Regular physical activity does/would help to improve my general health	341 (85)	14 (4)	45 (11)
Regular physical activity does/would give me the opportunity to socialise with other people	317 (79)	30 (8)	52 (13)
Regular physical activity does/would help me remain mentally active	342 (86)	9 (2)	49 (12)
Regular physical activity does/would help me to remain independent	356 (89)	8 (2)	35 (9)
Regular physical activity does/would give me a sense of accomplishment	340 (85)	9 (2)	51 (13)

believed that taking part in regular physical activity could help them remain independent and would help them to feel better. Most believed that physical activity would confer actual physical improvements by improving muscle strength and tone, by increasing levels of energy and by helping to relieve aches and pains. In addition most believed that physical activity could improve their general well being, including their mental health.

Despite this high level of knowledge, levels of physical activity remained relatively low. Almost all (94%) engaged in some light housework, but 21% did not undertake any heavy housework. The majority walked to the shops or post office, but 31% reported that this purposeful walking accounted for <2 hours per week. Eighty two percent of participants' homes had gardens. During the summer months, 68% of those with gardens did light gardening, while only 42% did any heavy gardening.

The participants also engaged in a range of social activities. These included playing bingo, cards or snooker, attending church or a social club and going to lunch/coffee with friends. The number of activities undertaken by each individual ranged from 0–6, with a median of one activity. The amount of time spent on these activities also varied substantially with 20% spending no time on them, 36% spending <4 hours and only 44% spending >4 hours.

Overall, 53% did less than 2 hours of leisure time physical activity per week, with 36% doing none at all. However, most participants (79%) believed that they were doing enough physical activity to keep healthy. Among those who were active in their leisure time, the time spent on their chosen activities ranged from 1–25 hours per week. Recreational walking was the most popular activity followed by bowling and fitness exercises. The time spent on leisure time physical activity decreased with age. While 29% of the younger participants did no leisure time activity, 46% of the older group did none. Men were more likely to take part in leisure time physical activity than women (70% of men compared with 57% of women). In addition, while 21% of the men, who participated in leisure time activity, spent >10 hours per week on their chosen activities, only 10% of women spent >10 hours. Few people took part in strenuous exercise. Only 10% of participants reported taking part in physical activities that involved strenuous exercise of >20 minutes.

Logistic regression was used to identify which variables influence levels of leisure time physical activity. Forty of the 51 variables tested were identified as having a statistically significant deterrent effect on leisure time physical activity in univariate logistic regression. Regression modelling was then used to identify the factors that were statistically significant for the eight categories: personal details, lifestyle, perceived physical ability, beliefs about the benefits of physical activity, general health beliefs, deterrents to going out, physical symptoms and social influences (Table 3). Several variables were statistically significant in every category indicating that reluctance to take part in leisure time activity is influenced by a variety of determinants. More than half of these variables were significant at $P < 0.0001$ and had odds ratios >3. The factors which appear most important at this stage include lack of interest in physical activity (OR 17.7), shortness of breath (OR 6.1) and embarrassment at joining in group activities (OR 4.7). This table indicates that many factors have a powerful deterrent effect on the decision to take part in leisure time physical activity.

It is notable that demographic factors were all significant in the univariate analyses: age ($P < 0.0001$); gender ($P = 0.005$); and deprivation index ($P = 0.03$). However when fitted with all the factors in their category 'Personal details', these factors became non-significant being replaced

Table 3. Logistic regression: factors exerting statistically significant effects within categories

Variable	Number of categories	*P*-value of factor[a]	Comparison		Odds ratio[b]	95% CI[b]
			Reference	Compared to		
Personal details						
Daily access to a car	2	<0.0001	Yes	No	3.1	2.03–4.70
Lifestyle						
Alcohol use	3	<0.0001	<14/21 units	None	3.1	1.92–4.88
Eats fruit & vegetables every day	2	0.001	Yes	No	2.4	1.43–3.96
Perceived physical ability						
Perceived fitness	3	<0.0001	Very fit	Unfit	9.4	3.79–23.52
Perceived current weight	4	0.003	Normal	Underweight	2.6	1.00–6.65
Fear of falling	2	<0.0001	No	Yes	3.1	1.79–5.22
Access to facilities						
Lack of transport	3	<0.0001	Disagree	Agree	4.3	2.10–8.86
Dislikes going out alone	3	0.003	Disagree	Agree	1.4	0.83–2.47
Dislikes going out in the evenings	3	0.01	Disagree	Agree	2.0	1.17–3.42
Dislikes going out in bad weather	3	0.03	Disagree	Agree	1.7	0.96–2.86
Physical symptoms						
Shortness of breath	3	<0.0001	Never/rarely	Often/daily	6.1	2.73–13.45
Lack of energy	3	<0.0001	Never/rarely	Often/daily	5.9	2.44–14.47
Painful joints	3	0.009	Never/rarely	Often/daily	2.2	1.24–4.02
Beliefs about the effects of exercise						
Lack of interest in physical activity	3	<0.0001	Never/rarely	Often/daily	17.7	7.00–44.52
Exercise lengthens life	3	0.009	Yes	No	2.5	1.23–3.67
Currently exercise enough to keep healthy	3	0.02	Yes	No	2.3	0.25–4.44
Social activities						
Would be embarrassed to join a group	4	<0.0001	No	Yes	4.7	1.71–12.54
Meeting new people is good for me	3	<0.0001	Strongly agree	Unsure/disagree	3.3	1.89–5.93
Current group member	2	0.001	Yes	No	2.2	1.41–3.54
General health beliefs						
Increasing physical fitness is good for me	3	<0.0001	Strongly agree	Unsure/disagree	5.2	2.60–10.32

[a]The *P*-value indicates the statistical significance of each factor as a whole.
[b]The odds ratio and the 95% confidence interval refer to the comparison of the highest level to the lowest level of each factor.

by the factor 'Daily access to a car'. Care was taken to ensure that this was not a statistical fluke which distorted the nature of the final regression model. None of the three factors age, gender and deprivation would enter the final model whether or not 'Daily access to a car' was in the list of variables available for selection. Thus the effects of the factors were explained by the other variables in the final model.

Eleven variables from six of the eight categories remained in the final model (Table 4). The physical symptoms of shortness of breath, lack of energy and painful joints were all significant. Problems in gaining access to facilities (dislike of going out alone or in the evening) deter some people from going out. Perceived lack of physical fitness and a lack of positive beliefs and attitudes towards physical activity (lack of interest in physical activity, and not sharing the belief that regular exercise can lengthen life) also contribute to sedentary behaviour. Finally a reluctance to meet new people and not belonging to a group were also important. Overall the model provides a good explanation why some people did little leisure time physical activity. The Nagelkerke pseudo R^2, which provides a surrogate estimate for the proportion of variance explained, is 0.539.

The relative contribution of each factor can be assessed by the change in log likelihood if the term is removed from the final model and from the magnitude of the odds ratio. Lack of interest in physical activity was the most powerful of all the factors, but was closely followed by not believing that meeting new people is beneficial. A further five factors also had important effects: doubting that exercise lengthens life, lack of energy, lack of daily access to a car, painful joints, dislike of going out alone. Interestingly none of the lifestyle choices (smoking, diet and alcohol use) or demographic factors was statistically significant in the multivariate analysis.

Discussion

This study confirms previous reports that many older people do not participate in leisure time physical activity [7, 8, 10]. We found that levels of knowledge about the specific health benefits of physical activity were high. The majority were also clear about the potential personal benefits of taking part in physical activity and the vast majority of participants thought they were doing enough exercise to keep healthy. Despite this many had low levels of leisure time activity. This poses a major challenge for those planning initiatives aimed at increasing levels of leisure time physical activity. National campaigns may be necessary to change perceptions about desirable levels of physical activity among older people and to persuade people that participation in leisure time physical activity is normal.

Table 4. Factors exerting statistically significant independent effects: the final model

Variable (number of categories)	Change in log likelihood[a]	*P*-value of factor[b]	Comparison		Odds ratio[c]	95% CI[c]
			Reference	Compared to		
Personal details						
Daily access to a car (2)	9.3	0.002	Yes	No	2.6	1.39–4.70
Perceived physical ability						
Perceived fitness (3)	7.3	0.03	Very fit	Not very fit/not at all fit	4.3	1.29–14.43
Access to facilities						
Dislikes going out in the evening (3)	6.6	0.04	Disagree	Agree	1.6	0.77–3.11
Dislikes going out alone (3)	7.6	0.02	Disagree	Agree	1.3	0.66–2.69
Physical symptoms						
Shortness of breath (3)	6.1	0.05	Never/rarely	Often/daily	3.2	1.18–8.65
Lack of energy (3)	9.3	0.01	Never/rarely	Often/daily	3.3	1.13–9.64
Painful joints (3)	9.2	0.01	Never/rarely	Often/daily	2.5	1.15–5.22
Beliefs about the effects of exercise						
Lack of interest in physical activity (3)	19.4	<0.0001	Never/rarely	Often/daily	7.8	2.68–22.58
Believes that exercise lengthens life (3)	12.0	0.002	Yes	No	3.2	1.59–6.32
Social activities						
Believes that meeting new people is good (3)	17.0	<0.0001	Strongly agree	Unsure/disagree	3.4	0.77–3.11
Current membership of any group (3)	6.8	0.009	Yes	No	2.1	1.20–3.81

[a]Change in –2log likelihood if the term is removed from the final model.
[b]The *P*-value indicates the statistical significance of each factor as a whole.
[c]The odds ratio and the 95% confidence interval refer to the comparison of the highest level to the lowest level of each factor.

This study has shown that a complex interaction of factors deters older people from taking part in leisure time physical activities. These findings also clarify why older people do not respond to many of the interventions that encourage physical activity. A substantial number of participants were deterred by physical symptoms. Over 100 participants (27%) reported that they suffered from painful joints on most days or every day and 12% reported shortness of breath when physically active. This finding has implications for primary health care staff. Not only may the underlying cause of these problems need to be investigated and managed effectively, but patients may also need reassurance on the meaning of symptoms. Shortness of breath may be interpreted by older people as a symptom of disease, rather than a normal response to physical activity. Patients therefore need guidance on the interpretation and management of symptoms. Similarly, patients with osteoarthritis may need reassurance that physical activity can be beneficial and may alleviate painful joints [19]. Positive support and encouragement from healthcare professionals may help older people overcome fears about falling or encourage those who are deterred because they believe that they are unfit, or suffer from a lack of energy. Physical activity, within the constraints of physical ability, should be encouraged particularly among older more frail people.

Reluctance to go out in the evening and to go out alone discouraged many from taking part in physical activity. Although lack of transport did not remain in the final model, those who did not have daily access to a car were more likely to be sedentary. These factors suggest that safety may be a major concern to city dwelling older people [20]. Surprisingly, lack of money did not feature in the final model. Provision of leisure time activities at acceptable times during the day supported by a good public transport system may increase confidence in going out.

Several factors that contribute to a lack of positive attitude about physical activity and the benefits of interacting with others remained in the final model. These are likely to be the most difficult to influence. Lack of interest in physical activity may be indicative of other underlying factors such as depression, which is common among older people [21]. Alternatively, it may reflect long-term behaviour and attitudes to physical activity itself [22]. In order to raise interest in physical activity health education campaigns could highlight the non-health benefits of physical activity that are important and valued by many older people. These include socialising and enjoyment of the activity itself. In addition, rather than promoting general physical activity, campaigns could promote and facilitate involvement in specific physical activities that older people may be interested in e.g. bowling or dancing.

A potential limitation of this study was the low response rate of 46% of those invited to take part agreeing to be interviewed. However, many studies in older people report low response rates, sometimes as low as 13% [23–26]. In the present study the low response rate makes the findings even more striking. We found that lack of interest in physical activity was by far the most powerful deterrent. It seems likely that non-responders to a survey on activities would have even less interest in physical activity. Thus levels of physical activity may be over estimated in the present study and the strength of the deterrents to leisure time physical activity may be greater. This is supported by a recent study which showed that responders to a study on physical activity are more likely to be interested in the topic and more motivated to be physically active [27]. In summary this study has shown that reluctance to participate in leisure time physical activities is driven by a complex interaction of factors. These factors are extremely difficult to overcome.

Focussing on one or a few factors is likely to fail. Encouraging increased physical activity would require that beliefs about desirable levels of activity in older people be changed. Alleviation of physical symptoms would require action in primary care together with support to address fears about perceived ability to undertake physical activity. Finally easily accessible facilities should be provided to encourage participation in physical activity.

Key points

- Many older people do not participate in leisure time physical activity.
- The majority believe they do enough exercise to keep healthy.
- Deterrents to physical activity include lack of interest, physical symptoms, difficulties with access, reluctance to join a group and one's belief about the benefits of physical activity.
- Strategies to increase activity levels would need to address all these deterrents.

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