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Motives for and Barriers to Physical Activity Among Older Adults With Mobility Limitations

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The purpose of this study was to investigate what older adults with severe, moderate, or no mobility limitation consider motives for and barriers to engaging in physical exercise. Community-dwelling adults (N = 645) age 75–81 years completed a questionnaire about their motives for and barriers to physical exercise and answered interview questions on mobility limitation. Those with severely limited mobility more often reported poor health, fear and negative experiences, lack of company, and an unsuitable environment as barriers to exercise than did those with no mobility limitation. They also accentuated disease management as a motive for exercise, whereas those with no or moderate mobility limitation emphasized health promotion and positive experiences related to exercise. Information about differences in motives for and barriers to exercise among people with and without mobility limitation helps tailor support systems that support engagement in physical activity among older adults.

***Key Words**:* cross-tabulation, aging, exercise, determinants, functional limitations

Observational studies have shown that older adults who engage in physical exercise have a lower risk of disability and mortality, regardless of the presence of other disability risk factors such as mobility limitation (Bokovoy & Blair, 1994; Ferrucci et al., 2004; Hirvensalo, Rantanen, & Heikkinen, 2000; LaCroix, Guralnik, Berkman, Wallace, & Satterfield, 1993). Many countries have included the need to develop strategies aimed at increasing older adults' participation in physical exercise in their national health policies. The underlying idea in these initiatives is that increasing engagement in physical exercise among older adults at risk of disability will help reduce the burden of care (Bauman, Bellew, Vita, Brown, & Owen, 2002; *Health of Older People Strategy,* 2002; *National Blueprint,* 2001; *National Service Framework for Older People,* 2001; U.S. Department of Health and Human Services, 1996). Understanding differences in motives for and barri-

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ers to physical exercise among older adults in varying stages of the disablement process compared with those with no mobility limitation serves as the basis for the development of such strategies.

Earlier studies among heterogeneous age groups have shown that the major barriers to physical exercise are poor self-rated health (Booth, Bauman, Owen, & Gore, 1997; Clark, 1999; Grossman & Stewart, 2003; Hirvensalo, Lampinen, & Rantanen, 1998; McPherson & Yamaguchi, 1995; O'Neill & Reid, 1991; Satariano, Haight, & Tager, 2000; Whaley & Ebbeck, 1997) and symptoms of diseases such as pain and fear of pain (Clark; Hays & Clark, 1999). In the study reported by Cohen-Mansfield, Marx, and Guralnik (2003), in a nondisabled but at-risk population age 75–85 years, the main barriers to physical exercise, particularly among those with the lowest performance scores, were health problems and pain. Many older adults are afraid of falls or injury while doing exercises and thus avoid them (Booth et al.; Garber & Blissmer, 2002; Howland et al., 1998; McPherson & Yamaguchi; O'Brien Cousins, 2000; Satariano et al.; Whaley & Ebbeck). Lack of energy is also often mentioned among frail older adults (King et al., 2000). In addition, neighborhoods perceived as unsafe and difficult weather conditions have been found to be barriers to walking for fitness (Clark; Garber & Blissmer; Grossman & Stewart; McPherson & Yamaguchi; Whaley & Ebbeck). Other barriers include cultural expectations and social factors. In addition, misconceptions such as "disabled old people need nothing but rest" remain common even among professionals working with older adults in the fields of health and social care. Older adults with functional limitations might experience multiple barriers to physical exercise (Clark).

Although poor health is probably the most often mentioned barrier to exercise among older adults, maintaining health is the most often reported motivator for exercise (Clark, 1999; Hirvensalo et al., 1998; Shephard, 1994). Particularly among women, social contacts and the social support of an exercise group are important motives, especially when starting as an exerciser (Clark; Damush, Perkins, Mikesky, Roberts, & O'Dea, 2005; Hirvensalo et al., 1998; McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; Shephard). Positive outcome expectations and exercise self-efficacy have been reported to have a positive effect on the motivation to engage in physical exercise (Damush et al.; Grembowski et al., 1993; Leveille, Cohen-Mansfield, & Guralnik, 2003; Resnick, Zimmermann, Orwig, Furstenberg, & Magaziner, 2000). Being advised to exercise by a physician or other health-care professional has also been found to be related to an increased engagement in physical exercises (Hirvensalo, Heikkinen, Lintunen, & Rantanen, 2003).

Thus far only a small amount of information is available on the perceived barriers to or motives for exercise engagement among representative groups of older adults with severe, moderate, or no mobility limitation. The purpose of this study was to find out whether these groups differ in their motives for and barriers to participation in physical exercise.

Methods

The baseline data reported in this study are taken from a population-based randomized controlled 2-year intervention study called Screening and Counseling for Physical Activity and Mobility in Older People (SCAMOB, ISRCTN 07330512).

The aim of the project is to develop a physical activity counseling approach organized within primary care and to evaluate its impact on physical activity and functional decline in older adults at increased risk of further disability and loss of independence.

Participants

The study population comprised 645 community-living adults born between 1922 and 1928 who were residents in a city-center area of a town in central Finland. The criteria for inclusion in the study were set as follows: (a) the ability to walk at least 0.5 km without assistance, (b) only moderately physically active or sedentary (upper limit for physical activity was set at heavy physical activity <4 hr a week, which comprises categories 0–4 in the scale by Grimby [1986]), (c) no memory impairment (MMSE ≥22; Folstein, Folstein, & McHugh, 1975), (d) no medical contraindications for physical activity, and (e) informed consent to participate. The purpose of the screening criteria was to identify the people who would most likely benefit from the exercise-counseling intervention.

Procedure

A letter with information about the study was sent to all community-dwelling adults born between 1922 and 1928 and residents in the city-center area of a town in central Finland (N = 1,310). In the first phase, 1,100 people gave answers to questions on self-rated health, mobility, physical activity, and willingness to participate in the study during a 10- to 15-min phone interview. At the end of this phase, 17% of the potential participants were excluded from the study because they were judged to be too physically active or too mobility impaired. Of the 908 people regarded as eligible for the study, 727 (80%) agreed to a visit in their home by an interviewer. The second phase of the screening and baseline data collection consisted of an approximately 1-hr face-to-face interview. The interviewer first introduced the study, after which the participants were asked to sign an informed consent. At this point 34 people refused to participate further. On the basis of memory testing carried out during the at-home interview and the more detailed information obtained on physical activity, another 36 people were excluded. In the third phase of the study, 657 people were given the self-report questionnaire on factors enhancing and inhibiting physical activity. The questionnaire was left with the participants during the home visit. The participants were asked to fill it in and bring it with them when they came for tests on health and mobility at the study center. A nurse examiner checked the questionnaire for completeness. Where necessary, the questions left blank were filled in by interviewing the subject. Twelve people refused to fill in the questionnaire, however, so the final number of the people with complete data for the current analyses was 645. The baseline data used in the current study were collected between April and August 2003. The study-center tests lasted for an hour and included measurements of height and weight, blood pressure, visual acuity, maximal walking speed over 10 m and stair mounting height, timed five chair stands and time to maintain balance in three different standing positions, maximal isometric grip strength, and leg-extension power. The complete study procedure is described in detail elsewhere (Leinonen et al., in press).

Measures

Information on mobility limitation was elicited during the face-to-face interview carried out by specially trained interviewers. The interview was part of the main project. Mobility limitation was studied with the following questions: "Are you able to walk 2 kilometers?" and "Are you able to climb one flight of stairs?" The response options were yes, with no difficulties; yes, but with some difficulties; yes, but with a lot of difficulties; yes, but not without help; and not even with help. Those who reported at least some difficulties both in walking 2 km and climbing one flight of stairs were rated as having severely limited mobility. Those who reported at least some difficulties in either walking 2 km or climbing one flight of stairs were rated as having a moderate mobility limitation, and those who reported no difficulty in walking 2 km or climbing one flight of stairs were rated as having no mobility limitation.

Motives for and barriers to physical exercise were elicited by asking the respondents to choose from a list of statements those with which they agreed. The items on the list were selected on the basis of the earlier studies carried out in our center (Hirvensalo et al., 1998) and the work of a specially formed panel of experts in the areas of exercise psychology, gerontology, and physical education, as well as professional physiotherapists and exercise instructors. The question on motives was as follows: "What causes you to undertake physical exercise? Circle all the items that describe your situation." The question on barriers to exercise was as follows: "What are the reasons that prevent you from exercising? Circle all the items that describe your situation." The lists consisted of 26 potential motives for and 24 barriers to exercise, which were later grouped into categories modified on the basis of previous studies on exercise adherence and the determinants of physical activity (King et al., 1998; McPherson & Yamaguchi, 1995). The categories for motives were disease management, health maintenance, positive experiences related to exercise, positive attitudes to and knowledge about the benefits of exercise, good pastime, social contacts and suitable environment, self-expression and self-confidence, and no reason to exercise (Table 1). The categories for the barriers to exercise were poor health, fear and negative experiences, lack of knowledge, lack of time and interest, lack of company and unsuitable environment, and no barriers (Table 2).

Specific Physical Exercise and Overall Physical Activity Levels

Engagement in specific types of physical exercise, as well as overall level of physical activity, was studied in order to characterize the participants in each mobility-limitation category. Physical activity in this study refers to overall daily activity comprising, for example, domestic work and specific physical exercises. Physical exercise refers to specific activities such as walking for fitness that a person does, for example, in order to maintain health (Caspersen, Powell, & Christenson, 1985). Level of physical activity, comprising overall daily activity, was assessed using a modified version of the 7-point scale introduced by Grimby (1986): 0 = *no or only slight physical activity,* 1 = *most activities done sitting down,* 2 = *light physical activity,* 3 = *moderate physical activity about 3 hr/week,* 4 = *moderate physical activity at least 4 hr/week or heavy physical activity <4 hr/week,* 5 = *physical exer-*

Table 1 The Motive Categories and Topics Included in the Categories

Motive category	Items included
Disease management	Exercise reduces my pain.
	Exercise helps with disease management.
	Health-care personnel have advised me to exercise.
Health maintenance	Exercise helps with health maintenance.
Positive experiences	Exercise increases my energy.
	Exercise feels nice.
	Exercise is fun.
	Physical effort is enjoyable.
	Exercise is uplifting.
	Exercise is a force of habit.
	Exercise is a good pastime.
Positive attitudes and knowledge about benefits	Exercise keeps me in good physical condition.
	Exercise prevents me from getting lazy.
	Exercise relaxes me.
	Exercise keeps me young and delays aging.
	Exercise helps me think clearly.
Social contacts	I meet friends when exercising.
	Exercise helps me get to know new people.
Suitable environment	It's nice to exercise in good weather.
	My neighborhood is suitable for exercising.
	There are good exercise facilities near my home.
	Exercise is affordable.
Self-expression and self-confidence	I can express myself with exercise.
	Exercise gives me self-confidence.
	I enjoy nature when exercising outdoors.
No reason to exercise	I have no reason to exercise

cise several times a week or heavy leisure time working at least 3 hr/week, and 6 = *competitive sports several times a week*. Alternatives from 0 to 2 were categorized as minimal physical activity.

Engagement in physical exercise was elicited with the questions "Do you exercise for the sake of your physical condition and/or health?" and "What kind of physical exercise and how many times a week?" Walking for fitness was the most common form of exercise and was selected for analysis in this article. Walking frequency was measured in three categories: more than three times a week, one to three times a week, and rarely or never.

Table 2 The Barrier Categories and Topics Included in the Categories

Barrier category	Items included
Poor health	Pain prevents me from exercising.
	Diseases prevent me from exercising.
	Poor eyesight prevents me from exercising.
	Health-care personnel have warned me not to exercise.
	I'm too tired to exercise.
Fear and negative experiences	I'm afraid of falling when exercising.
	I'm afraid of getting injured when exercising.
	Physical exercise feels uncomfortable.
	I feel insecure when exercising outdoors.
Lack of knowledge	I'm too old to exercise.
	I don't know why I should exercise.
	I don't know where to exercise.
	I have no skills for exercising.
Lack of time and interest	I have no time to exercise.
	I have no interest in exercising.
	I have enough other interests.
	I'm not used to exercise.
Lack of company	I don't like exercising alone.
Unsuitable environment	Weather conditions prevent me from exercising.
	My neighborhood is not suitable for exercising.
	Exercise facilities are too far away.
	Exercising is too expensive.
	I have no equipment needed for exercising.
No barriers	I have no barriers to exercise.

Analyses

Differences in characteristics and in motives for and barriers to exercise between the three mobility groups were examined by means of cross-tabulation with the chi-square test and one-way analysis of variance. SPSS 12.0.1 software was used for the data analysis.

Results

The mean age was the same for those with severely or moderately limited mobility, 77.9 years (*SD* = 1.97 and 2.06, respectively). Those with no mobility limitation

were on average 77.4 years of age ($SD = 1.89$, $p = .003$). Participants with severely limited mobility were more often women, not married, and more often had cardiovascular diseases, chronic obstructive pulmonary diseases, diabetes, musculoskeletal diseases, and pain than those with no mobility limitations (Table 3). Among those with severely limited mobility, three out of four had musculoskeletal diseases, whereas only half of those with moderately limited mobility and one third of those with no mobility limitations reported the same ($p < .001$). Walking for fitness three or more times a week was more common among those with moderate or no mobility limitation than among those with severe mobility limitation ($p < .001$). Over half (53%) of those with severe mobility limitation were only minimally physically active, compared with only 31% of those with moderate mobility limitation and 11% of those with no mobility limitation ($p < .001$).

Table 3 Characteristics of the Study Population Grouped According to Level of Mobility Limitation

	Mobility Group				
Characteristic	**Severely limited mobility (*n* = 153), %**	**Moderately limited mobility (*n* = 166), %**	**No mobility limitation (*n* = 326), %**	χ^2	***p***
Female gender	86	77	67	23.84	<.001
Married	31	37	47	12.14	.002
Education through middle school or more	34	22	34	8.72	.013
Chronic conditions					
cardiovascular diseases	70	68	55	14.83	.001
chronic obstructive pulmonary diseases	23	15	11	13.12	.001
neurological diseases	2	5	2	3.99	.136
diabetes	14	9	6	10.89	.004
mental diseases	2	2	1	.53	.769
musculoskeletal diseases	74	57	35	74.97	<.001
back pain	41	27	12	56.85	<.001
knee pain	40	24	11	57.70	<.001
Minimal physical activity[a]	53	31	11	106.48	<.001
Walking for fitness ≥3 times/week	38	51	58	17.30	<.001

Note. χ^2 $df = 2$.

[a]No physical activity or only light physical activity.

Motives

Almost half of those with severely (49%) or moderately (46%) limited mobility, as compared with about a third (36%) of those with no mobility limitation, reported disease management as a motive for exercise ($p = .011$; Table 4). Health maintenance ($p = .006$), positive experiences ($p = .008$), and suitable environment ($p = .003$), as well as self-expression and self-confidence ($p = .037$), were more rarely reported motives for exercise among those with severe mobility limitation compared with those with no mobility limitation. There was no difference between the mobility limitations in reporting social contacts as a motive for exercising ($p = .528$).

All in all, the mean number of all reported motives for exercise among those with severe mobility limitation was 7.7 ($SD = 5.92$), among those with moderately limited mobility it was 8.2 ($SD = 6.05$), and those with no mobility limitation reported on average almost 10 different motives ($M = 9.6$, $SD = 6.37$, $p = .002$).

Barriers

Having no barriers to exercise was rarer among those with severe mobility limitation (6%) and moderate mobility limitation (25%) than among those with no mobility limitation (56%, $p < .001$; Table 5). Almost all those with severely limited mobility (84%) reported poor health as a barrier to exercise, as compared with half of those with moderately limited mobility (55%) and one fourth of those with no mobility limitation (24%, $p < .001$). Fear and negative experiences (49%), lack of company (14%), and an unsuitable environment (41%) were more often reported as barriers

Table 4 Differences in Motives for Physical Exercise Between Mobility Groups

Motive	Mobility Group				
	Severely limited mobility ($n = 153$), %	Moderately limited mobility ($n = 166$), %	No mobility limitation ($n = 326$), %	χ^2	p
Disease management	49	46	36	8.95	.011
Health maintenance	62	69	76	10.10	.006
Positive experiences	70	79	83	9.64	.008
Positive attitudes and knowledge about benefits	70	73	78	3.20	.202
Social contacts	24	29	29	1.28	.528
Suitable environment	68	78	85	18.75	<.001
Self-expression and self-confidence	49	47	58	6.61	.037
No reason to exercise	5	3	0.3	13.02	.001

Note. χ^2 $df = 2$.

Table 5 Differences in Barriers to Physical Exercise Between Mobility Groups

Barrier	Mobility Group				
	Severely limited mobility (*n* = 153), %	Moderately limited mobility (*n* = 166), %	No mobility limitation (*n* = 326), %	χ^2	*p*
Poor health	84	55	24	161.7	<.001
Fear and negative experiences	49	34	13	76.42	<.001
Lack of knowledge	8	9	3	7.11	.029
Lack of time and interest	13	15	10	3.24	.198
Lack of company	14	11	7	6.68	.035
Unsuitable environment	41	38	25	15.52	<.001
No barriers to exercise	6	25	56	126.7	<.001

Note. χ^2 *df* = 2.

to exercise by those with severe mobility limitation than by those with no mobility limitation (13%, $p < .001$; 7%, $p = .035$; 25%, $p < .001$, respectively). Those with severely limited mobility reported on average three different barriers to exercise ($M = 2.9$, $SD = 1.91$), which was significantly more than the number of barriers reported by those with moderate ($M = 2.0$, $SD = 1.83$) or no mobility limitation ($M = 1.0$, $SD = 1.49$, $p < .001$).

Discussion

The purpose of this study was to identify the motives for and barriers to physical exercise among community-living older adults with severe, moderate, or no mobility limitation. Those with severely limited mobility mentioned more reasons for not exercising than those with better mobility. As might be expected, they were also less physically active. Poor health, fear and negative experiences, lack of company, and an unsuitable environment were reported more often by those with severely limited mobility than by those with less mobility limitation. People with severely and moderately limited mobility also emphasized disease management as a motive for physical exercise, whereas those without mobility limitation emphasized health promotion. These results indicate that level of mobility has an impact on the frequency of reporting certain factors as motivators or inhibitors of the willingness to engage in physical exercise, as well as on the actual activity. The divergence between people with different levels of mobility limitation in their motives and barriers is an important argument in favor of providing individualized support to increase physical activity among older adults.

The results of the current study are in line with those of earlier studies among heterogeneous groups of older adults with specific diseases or with specific interests. For example, poor health has often been reported as a barrier to exercise (Booth et al., 1997; Grossman & Stewart, 2003; Hays & Clark, 1999; Hirvensalo et al., 1998). Our study provides fresh support for this information by showing that poor health was most often reported by people with severe mobility limitation and who had more chronic conditions than the others. Health promotion has been reported as a motive for physical activity (Cohen-Mansfield et al., 2003; Hirvensalo et al., 1998). In our study health maintenance was reported, especially by people who had no mobility limitation. Fear of falling and injuries, lack of earlier exercise experiences (Clark; Howland et al., 1998; O'Brien Cousins, 2000), lack of company (Hirvensalo et al. 1998), and an unsuitable local environment (Clark; Hays & Clark, 1999; King et al., 2000) have previously been reported to be common barriers to exercise. In our study, fear and negative experiences were often reported as barriers to exercise by those with mobility limitation but rarely by those with no mobility limitation. This suggests that people with mobility limitations need to be convinced about the safety of the environment and the exercise activity itself and might need personal support, for example in the form of a volunteer escort, to consider undertaking new forms of exercise.

Lack of knowledge (McPherson & Yamaguchi, 1995; O'Neill & Reid, 1991) and lack of interest (Hays & Clark, 1999; Hirvensalo et al., 1998) have been reported to be common barriers to exercise in earlier studies. In our study, however, very few people reported them as barriers to exercise. This suggests that campaigns to increase awareness of the benefits of exercise by themselves might not necessarily be successful in increasing physical exercise participation in older adults. Furthermore, Heck and Kimiecik (1993) argued that informing people about the benefits of physical activity might not be as good a method of promoting physical activity as emphasizing the enjoyment to be gained from physical activity. Older adults with severely limited mobility often reported disease management as a motive for physical exercise, whereas they mentioned positive motives, such as self-expression, self-confidence, or positive attitudes, less often than did those with better mobility. It is known that among active older adults, human interaction and positive experiences are powerful motivators to exercise (Clark, 1999; Garber & Blissmer, 2002; Hirvensalo et al., 1998; Shephard, 1994). Finding ways to provide older adults with mobility limitation opportunities to personally acquire positive exercise experiences rather than just informing them about the benefits of exercise might be a more successful way to promote physical activity participation to them.

The considerable number of social and environmental barriers to exercise observed among those with severely limited mobility suggests that it might not be possible to promote physical exercise with a straightforward "one size fits all" approach. The current results argue for individualized physical activity counseling and other individualized support systems for older adults. Physical activity is not an easily adopted behavior, because engaging in it might feel threatening, it takes time and effort, and the health benefits might not be immediate. Thus, for older adults with mobility limitation it might be necessary to accompany counseling with arranging companionship, as well as adapted exercise services in accessible exercise facilities, to enable them to try out new forms of exercise. The effort may be worthwhile, however, because even a short physical activity intervention might

improve self-efficacy and self-rated health, both important factors for continuing physical exercise (Clark, 1999).

Many of the environmental barriers to physical activity are potentially removable by better community planning. Deficiencies in accessibility, such as the inability to reach facilities and lack of suitable activity programs, are barriers for all older adults (Garber & Blissmer, 2002; McPherson & Yamaguchi, 1995), particularly those with mobility limitation. Public-policy solutions in terms of designing communities and facilities to suit older adults' needs offer a sustainable means of promoting physical activity (King et al., 2000). It is also important to recognize that financial limitations might be a major perceived obstacle for many older adults, so it is recommended that communities provide subsidized exercise classes for them.

The strength of the current study is that a large and representative group of older adults was examined. The method used in this study was a standardized checklist questionnaire, which is a commonly used method. The only problem in the use of a checklist questionnaire is that it might induce some people to check items that are not relevant to them. Analyses of the current study responses showed logical patterns of motives for and barriers to exercise according to the mobility categories, thus providing further support for the validity of the method. The advantage of a checklist over open-ended questions is that open-ended questions might depend on memory and awareness of the affecting factors, possibly resulting in underreporting.

The findings of this study have extended those of previous studies by demonstrating that mobility limitations are related to motives for and barriers to physical activity. In particular, older adults who are experiencing the first signs of physical decline could benefit from physical activity interventions that concentrate on removing their perceived barriers and supporting their motives to engage in the kind of physical activity that promotes physical-functional capacity. Those with mobility limitations especially need individually tailored, easily accessible physical activity programs to avoid negative experiences. The current findings serve as the foundation for the development of such programs and strategies. A future challenge for research, also raised by Brawley, Rejeski, and King (2003), is to investigate the effectiveness of individualized programming for people with varying degrees of mobility limitation.

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