

## Age Differences in the Motivating Factors for Exercise

**Paul G. Campbell, Domhnall MacAuley, Evelyn McCrum,  
and Alun Evans**

The Queen's University of Belfast

Different people exercise for different reasons. Older persons may have different priorities than younger ones and thus are motivated to exercise by different factors. Given the changing demographics with an increasing proportion of older adults in the general population, it is important that we do not overlook this cohort when designing health promotion and illness prevention programs. Motivating factors for physical activity were recorded by participants ( $N = 916$ ) in the Northern Ireland Health and Activity Survey (1994) using an extensive computerized interview. In 10 of the 13 motivating factors for exercise studied, there were significant differences between age groups on the importance of personal goals and the perceived efficacy of exercise in achieving these goals. This has implications for exercise promotion programs.

**Key words:** physical activity, health promotion, behavior change

Most adults do not engage in sufficient exercise, and population-wide interventions have been advocated to increase levels of activity to meet public health guidelines (Sallis, Bauman, & Pratt, 1998). An alternative approach to exercise promotion is individually tailored counseling, usually on a one-to-one basis.

Baranowski, Anderson, and Carmack (1998), in reviewing 25 physical activity intervention studies, argued that more research in this field should examine the predictors of physical activity. In order to change physical activity behaviors, we must first ascertain what the predictor variables of these behaviors are. Baranowski et al. argue that we can do this through what they call "basic behavioral and social science research" (p. 293). They recommend that significantly more of this type of research be done in order to understand why people exercise. The present study argues that interventions, even population-wide interventions, should focus on variables that have been shown to motivate the target cohort to exercise.

As the proportion of older adults in the population of the UK increases, it becomes ever more important to identify areas of need in elderly health care. Stephens and Caspersen (1994) reported that physical activity declines markedly with increasing age. While this may be a function of limitations due to deteriorating health, Dishman (1994) suggests that it may also be attributed to a lack of knowledge among older adults as to the benefits of physical exercise.

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The authors are with the Dept. of Epidemiology and Public Health, The Queen's University of Belfast, Mulhouse Bldg, Institute of Clinical Science, Grosvenor Rd, Belfast BT12 6BJ, Northern Ireland.

The Northern Ireland Health and Activity Survey (NIHAS) (MacAuley, McCrum, Stott, et al., 1994) reported that older men are half as likely to exercise as younger men, and that older women are one third less likely to exercise than younger women. A highly significant correlation was also found between the Dundee coronary risk score and physical activity (MacAuley et al., 1994).

Using the transtheoretical model of behavior change (Prochaska & DiClemente, 1983), motivationally tailored physical activity interventions have been shown to be more effective than generalized physical activity interventions (Bull, Kreuter, & Scharff, 1999; Marcus, Owen, Forsyth, Cavill, & Fridinger, 1998). This suggests that interventions targeted to a certain age group might be more effective than blanket approaches. Wallace, Buchner, Grothaus, et al. (1998) found that (a) senior citizen centers could be excellent venues for health promotion interventions, (b) interventions could be targeted to these venues, and (c) such interventions seem to improve health status.

Another theoretical approach to behavior change is the Theory of Planned Behavior (TPB) (Ajzen, 1985), which was developed in order to better predict behavior and behavior change. Briefly, this theory breaks behavior into component parts including perceived behavioral control, subjective norm, and attitudes toward the behavior. These components have an influence on a person's intentions to carry out a certain behavior, and subsequently these intentions have a direct effect on the likelihood of a behavior occurring. Smith and Biddle (1999) tested the power of the TPB in predicting exercise adherence and found that attitudes toward exercise (and also perceived control) predicted total physical activity. In similar tests of the predictive power of the TPB, attitude was again found to be important (Courneya & MacAuley, 1995; Kerner & Grossman, 1998). Thus the TPB supports the notion that attitudes toward exercise (and subsequently motivators for exercise) may help mediate behavior change in this area. In the present study, the motivational power of the factors studied is constructed using personal goals and attitudes toward the efficacy of exercise in achieving these goals.

King, Rejeski, and Buchner (1998) note that the vast majority of physical activity intervention studies have focused on younger adults, and they state that the older adult population is in "critical need of further attention and systematic investigation." The present study investigated specifically which factors are likely to motivate older adults to exercise, given that this cohort may be most at risk from coronary heart disease and have been shown to exercise less than younger adults (MacAuley et al., 1994)

## Methods

The data were collected as part of the Northern Ireland Health and Activity Survey (1994). Two-stage probability sampling yielded a representative sample of persons age 16 years or over in Northern Ireland ( $N = 1,600$ ). The first stage of selection consisted of selecting 1,600 addresses at random from the Northern Ireland rating and valuation list, stratified by region to ensure proportional sampling across the province. The second stage was carried out by interviewers using computer-assisted interviewing. The computer selected one person over 16 years of age from each household using the Kish grid random selection procedure (Kish, 1965). The sample was weighted to take account of household size. Of 1,456

effective addresses, 1,020 respondents were interviewed. Data on the motivating factors for exercise were obtained from respondents age 74 or younger ( $N = 916$ ).

The respondents were given an extensive computerized interview (MacAuley et al., 1994) which yielded information on many aspects of health and lifestyle. The questionnaire was based on the one used in the Allied Dunbar National Fitness Survey (1992), with some modifications to make the instrument relevant to Northern Ireland. This questionnaire contained, among questions on various areas of health and lifestyle, questions on the importance of certain personal goals. On a 5-point scale ranging from 1 = *not at all important* to 5 = *very important*, respondents were asked to rate how important certain factors were to them.

The interview also collected data on levels of physical activity. Respondents were asked to record their highest level of physical activity during the previous 4 weeks. They were told that this activity could be of a short duration and even on only one occasion. The categories were vigorous (activities with an energy cost of 7.5 kcal+ per minute), moderate (5 to 7.5 kcal per minute), light (2 to 5 kcal per minute), or no activity. A summary of highest activity levels categorized by age is shown in Table 1. This table also includes demographic data for younger adults ( $n = 520$ ) and older adults ( $n = 396$ ).

In the original NIHAS report (MacAuley et al., 1994), respondents were categorized by age into 6 groups, each covering an age range of approximately 10 years: Group 1 = 16–24 yrs; Group 2 = 25–34 yrs; Group 3 = 35–44 yrs; Group 4 = 45–54 yrs; Group 5 = 55–64 yrs; Group 6 = 65–74 yrs. Preliminary data analyses showed a rank order through the age groups, for example, with increasing age, progressively fewer respondents felt that exercise could help them to have fun. Age was not normally distributed in this sample and the distribution was bimodal, so it was thought appropriate to divide age into two groups. The one-size-fits-all (or blanket) approach to exercise promotion simply aims exercise promotion programs at the general population.

It was postulated that this might not be the most effective approach to raising activity levels in what is a very heterogeneous society. As stated above, different people exercise for different reasons. Therefore it might be important to explore the reasons why different groups do or do not exercise, with a view to designing exercise promotion programs that target those groups specifically. To this end we divided respondents into two overall age groups with three of the above groups in each; thus we compared adults ages 16–44 with adults ages 45–74.

Respondents were presented with 13 factors (listed in Tables 2–4). The proportions of older and younger adults who rated these factors as important personal goals (4 or 5 on a 5-point scale) were calculated. The factors were then ranked in order of importance for each age group. The questionnaire also contained questions on the efficacy of exercise in achieving these goals: Respondents were asked to rate on a 5-point scale—from “not at all” to “a great deal”—how much vigorous exercise might help them achieve certain factors in the personal-goals item. The proportion in each age group who rated exercise as highly effective (4 or 5 on a 5-point scale) in achieving these factors was calculated for each factor. Motivation scores for each factor were calculated by adding respondents’ rating of each factor on the personal-goal and efficacy-of-exercise items together, thus yielding a motivation score on a 10-point scale. Factors rated 8 to 10 on the new 10-point scale were thus considered to be powerful motivators for the respondent concerned. The

percentages of older and younger adults who rated the factors as powerful motivators were calculated. Factors were then ranked in order of their motivational power for each age group in the same way as the personal goals.

Data were analyzed using SPSS. Separate chi square tests were performed on the personal goals, efficacy of exercise, and motivational power variables to test for differences between the two age groups.

## Results

The response rate in this study was high, 70%, and the sample was considered representative of the Northern Ireland population with regard to age, gender, and region of residence. In the younger group, ages 16 to 44 years ( $n = 520$ ), 47% were male and 53% were female. In the older group, ages 45 to 74 ( $n = 396$ ), 42% were male and 58% were female. Demographic information for the sample is shown in Table 1.

To see which demographic variable would be most effective for targeting exercise promotion programs, a preliminary logistic regression analysis was carried out on the data. Activity level was used as the dependent variable, and the independent variables were entered in a forward conditional manner. Age group was entered on Step 1 ( $p < .001$ ) and sex was entered on Step 2 ( $p < .001$ ). The present study looked at how we might better target certain cohorts using age-specific factors; gender-specific factors in this sample are examined elsewhere (Campbell, 2000).

### *Personal Goal Setting*

The results of the personal-goal-setting construct can be seen in Table 2. The most significant difference between the younger and older age groups is the importance placed on the factor "to have fun." Significantly fewer older adults felt it was important to have fun (69% vs. 89%,  $p < .001$ ). Younger adults rated "to have

**Table 1 Demographic Information for the Sample**

	Younger adults (ages 16–44)	Older adults (ages 45–74)
Mean age ( <i>SD</i> )	30 (7.75)	60 (8.91)
Male	244 (46.9%)	167 (42.2%)
Vigorous activity	243 (46.7%)	49 (12.4%)
Moderate activity	257 (49.4%)	250 (63.1%)
Light activity	10 (1.9%)	42 (10.6%)
No activity	10 (1.9%)	55 (13.9%)
Smokers	182 (35%)	121 (30.6%)
Self-rated health, good or above	356 (68.5%)	243 (61.3%)
Mean BMI ( <i>SD</i> )	24.9 (4.1)	26.8 (4.82)

**Table 2 Percentage in Each Group Rating the Factors as Important, and the Rating of Each Factor**

Important personal goal (%)	Ages 16-44 (n = 520) Rank		Ages 45-74 (n = 396) Rank		p-value
To feel in good shape physically	89.9	1	89.8	2	1.0
To improve or maintain your health	89.8	2	73.2	9	<.001
To feel mentally alert	89.7	3	90.8	1	.722
To have fun	89.3	4	68.7	11	<.001
To get out of doors	86.6	5	87.8	3	.674
To relax, forget about your cares	82.9	6	83.8	5	.777
To get together and meet new people	82	7	77.6	6	.131
To feel independent	81.8	8	84.6	4	.302
To feel a sense of achievement	81	9	76.4	7	.117
To look good	79.8	10	75.4	8	.145
To learn new things	74.4	11	59.4	12	<.001
To control or lose weight	70.3	12	73	10	.434
To seek adventure and excitement	55.6	13	40.6	13	<.001

fun" as the 4th most important personal goal out of 13, whereas older adults rated it as only 11th. Perhaps the most surprising finding in this area is that significantly fewer older adults felt that "to improve or maintain your health" was an important personal goal (73% vs. 90%,  $p < .001$ ). Younger adults rated this as the 2nd most important personal goal out of 13, whereas older adults rated it as only 9th.

### *Effectiveness of Exercise*

The results of the effectiveness-of-exercise construct can be seen in Table 3. One of the most significant differences is for the importance placed on "to have fun." Significantly fewer older adults believed that exercise can help them to have fun (54% vs. 73%,  $p < .001$ ). It is interesting to note that, in the present study, older adults were quite conservative in their rating of the efficacy of exercise on all 13 factors. No more than 72% of older adults rated exercise as very effective on any of the 13 factors studied (see Table 3). Perhaps older adults feel that exercise is generally not effective in achieving the things that are important to them. This may explain some of the variance in activity levels between older and younger adults.

### *Motivational Power*

The results of the motivational-power construct can be seen in Table 4. One of the most significant differences between younger and older adults was on the motivational power each cohort attributed to the factor "to seek adventure and excitement." Both groups rated it as the weakest motivator of all. Only 29% of older adults rated it highly, compared with 44% of younger adults,  $p < .001$ . There

**Table 3 Percentages in Each Group Rating the Efficacy of Exercise as High in Achieving the Factors**

Exercise very effective (%)	Ages 16-44 (n = 520)	Ages 45-74 (n = 396)	p-value
To feel in good shape physically	88.8	70.6	<.001
To improve or maintain your health	86.6	71.5	<.001
To feel mentally alert	74.2	69	.114
To have fun	73.4	53.7	<.001
To get out of doors	77.1	68	.004
To relax, forget about your cares	59.4	48.8	.003
To get together and meet new people	66.9	57.5	.006
To feel independent	53.7	48.8	.177
To feel a sense of achievement	74	58.2	<.001
To look good	71.7	64.1	.03
To learn new things	56.4	48.2	.02
To control or lose weight	75.8	70.2	.078
To seek adventure and excitement	45.7	34.4	.001

were significant differences between age groups on the factor "to have fun." It was the 5th strongest motivator out of 13 for younger adults, but only the 11th of 13 for older adults. While 77% of younger adults rated it as a strong motivator, only 53% of older adults did, a difference that was highly significant,  $p < .001$ . A surprising difference between the two groups in this area was that significantly fewer older adults rated "to improve or maintain your health" as a strong motivator for exercise (72% vs. 85%,  $p < .001$ ).

### Discussion

The present study was designed to examine which motivational factors might differentiate older from younger adults. In examining the importance of the factors as personal goals, the greatest difference between groups was that, compared to younger adults, significantly fewer older adults felt it was important to have fun. Of the 13 personal goals, older adults rated "to have fun" as only the 11th most important. This suggests that, while stressing the fun aspect of exercise might be an effective way to increase participation among younger adults, it may not be as effective for older adults. Furthermore, as to how effective the respondents thought exercise would be in helping them achieve their personal goals, it was found that only 54% of older adults believed exercise could help them have fun. So the "exercise is fun" message may not be getting through to older adults, and apparently it is not a priority for them anyway. If exercise promotion for older adults is to focus on personal goals alone, the most important factor for them is "to feel mentally alert." The vast majority of older adults felt this was an important personal goal.

**Table 4 The Motivational Power and Rating Attributed by Respondents in Each Age Group**

Powerful motivator (%)	Ages 16-44 ( <i>n</i> = 520) Rank		Ages 45-74 ( <i>n</i> = 396) Rank		<i>p</i> -value
To feel in good shape physically	87.6	1	75	1	<.001
To improve or maintain your health	85.1	2	71.9	3	<.001
To feel mentally alert	76.9	4	73.5	2	.283
To have fun	76.7	5	53.1	11	<.001
To get out of doors	77.7	3	71.6	4	.049
To relax, forget about your cares	65.4	10	55.9	10	.007
To get together and meet new people	68	9	57.9	7	.003
To feel independent	57.8	11	56.9	8	.829
To feel a sense of achievement	73.1	6	56.7	9	<.001
To look good	69.9	7	61.4	6	.013
To learn new things	56.2	12	43.5	12	<.001
To control or lose weight	69.6	8	68.8	5	.818
To seek adventure and excitement	44	13	28.7	13	<.001

The greatest similarity between groups in this study was on the factor "to feel in good shape physically." Some 90% of both age groups agreed this is an important personal goal. However, significantly fewer older adults felt that exercise can help them achieve this. We should perhaps emphasize that one does not have to exercise in a gym or on a running track, or engage in some organized exercise program in order to feel good physically. Physical (and cardiovascular) benefits can be gained from physical activities of daily living. These are activities such as climbing stairs rather than taking the elevator or escalator, walking briskly rather than at a slow pace, and generally getting more aerobic activity in one's daily routine without drastically changing one's lifestyle.

Activities such as brisk walking for approximately 30 minutes can yield all the health benefits of more vigorous exercise with minimum impact on a person's daily lifestyle (Booth, Bauman, Owen, & Gore, 1997). In a randomized clinical trial, Dunn, Marcus, Kampert, et al. (1999) compared a "lifestyle physical activity program" with a traditional structured exercise intervention and found the lifestyle intervention program to be as effective as the traditional approach in increasing activity levels and, in turn, cardiorespiratory fitness.

A surprising finding of this study was the responses on the factor "to improve or maintain your health." Significantly fewer older adults felt that this factor was an important personal goal,  $p < .001$ . Older adults may feel that it is too late for them to do anything about illness prevention and are not concerned about preventing CHD in the future; they are more concerned about their functional status or their ability to get out and about. Indeed, in the personal goal-setting section, 87.8% of older adults rated "to get out of doors" as an important personal goal.

There are other factors that should be considered such as seeking adventure and excitement. This was the least powerful motivator for exercise across both age groups. Therefore, portraying exercise as an exciting activity is unlikely to increase participation levels for either younger or older adults.

Older adults believe it is important to relax and forget about their cares (84%), but only 49% felt that exercise could help them achieve this. Most older adults would like to relax, and if we thus change their perceptions of exercise, their participation levels may increase.

It is important at this point to stress that simply reinforcing the appropriate motivators for exercise to a certain cohort is unlikely to increase physical activity levels. Rather, this information should be used as part of a wider community effort to increase exercise participation. One such intervention has been suggested by Sallis et al. (1998), who advocate the use of planning groups and complementary education and policy interventions. They also highlight the need for further research to develop appropriate conceptual models.

One of the main strengths of this study lies in the sampling strategy used. The sample was randomized and representative, weighted to take account of the size of the household of each respondent. This study used a large population sample ( $N = 1,020$ ), which increases the generalizability of the results. Respondents were asked to rate each factor both on its importance as a personal goal and on how much they thought vigorous exercise could help them achieve these goals. Respondents were not asked to directly assess each factor for motivational power, thus a statistical construct was used. A separate item on motivational power may have increased the power of the study further.

In conclusion, there are various differences between younger (ages 16–44 yrs) and older (ages 45–74 yrs) adults with regard to the motivating factors for exercise, and this study strongly advocates that a one-size-fits-all approach to exercise promotion across age groups is inappropriate and may well be failing to target the cohort most at risk for CHD. Rather, we should target specific age groups by emphasizing the benefits of exercise which relate to variables that are likely to be powerful motivators to exercise for those particular age groups.

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