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The Perceived Importance of Physical Activity: Associations with Psychosocial and Health-Related Outcomes

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Abstract

Background—The purpose of this study was to assess the extent to which participation in a 12-month exercise program changed the degree of importance that older adults attached to physical activity. Additionally, associations among changes in physical activity importance and health-related and psychosocial outcomes were examined.

Methods—Community-dwelling older adults ($N = 179$) were recruited to participate in a 12-month exercise trial examining the association between changes in physical activity and fitness with changes in brain structure and psychological health. Participants were randomly assigned to a walking condition or a flexibility, toning, and balance condition. Physical, psychological, and cognitive assessments were taken at months 0, 6, and 12.

Results—Involvement in a 12-month exercise program increased the importance that participants placed on physical activity; this positive change was similar across exercise condition and sex. Changes in importance, however, were only associated with changes in physical health status and outcome expectations for exercise midway through the intervention. There were no significant associations at the end of the program.

Conclusions—Regular participation in physical activity can positively influence the perceived importance of the behavior itself. Yet, the implications of such changes on physical activity-related outcomes remain equivocal and warrant further investigation

Introduction

Older adults are the fastest growing segment of the US population [1]; therefore, it is important to further examine and better understand the health-related behaviors of this population and the implications that such behaviors may have on their health and well-being. It has been well established that the aging process is associated with an increased susceptibility to chronic conditions, including impaired physical function [2], a vital correlate of quality of life [3]. Increases in physical activity and improvements in physical fitness have been shown to positively influence functional limitations and quality of life [4, 5].

A number of studies examining the relationships among physical activity, function, and aspects of quality of life in older adults have concluded that the value or importance one

attaches to physical activity may have implications for relationships among and changes within these constructs. It has been suggested that the perceived importance of, or value placed on, certain behaviors may influence participation in the behavior itself [6], as well as the outcomes associated with these behaviors [7, 8]. The importance placed on physical activity, for example, has been postulated to moderate the effects of physical activity on health-related outcomes, such as perceived functional limitations and quality of life [4]. Rejeski and Mihalko [5] suggested that a greater sense of value placed on physical activity by older adults may be the result of an increase in perceived threats to health and function as a result of aging. It has also been suggested that relationships among physical activity and psychosocial constructs (e.g., self-esteem) may be more likely to exist when one places importance on the relevant elements of physical activity [9, 10].

Laffery and Isenberg [6] examined the association between the importance of exercise and participation in leisure-time physical activities, reporting that 28.0% of the variance in physical activity could be explained by importance. Conversely, McAuley and colleagues [9] conducted a prospective study examining the predictors of long-term maintenance of physical activity in a sample of older adults. They tested several different models of exercise prediction and found that the inclusion of importance did not significantly improve the fit of any of the models tested. Additionally, Trost and colleagues [11] tested a conceptual model of parental influence to examine physical activity participation in youth. Data revealed that parental importance for physical activity had an indirect influence on adolescent physical activity via its positive association with parental support. Interestingly, however, the importance that the parents placed on physical activity was not significantly related to their own physical activity behavior.

Although the results of studies exploring the effects of importance on physical activity remain equivocal, even less is known about how engagement in physical activities might contribute to changes in the importance associated with it [12-14]. It is likely that actual participation in physical activity is required in order to accurately assess the importance of the behavior itself. If people do not regularly participate in a specific health-related behavior, then their beliefs and conclusions about the behavior may be skewed or entirely inaccurate. This could make it difficult to fully understand and appreciate the importance of the behavior and its associated consequences in older adults, especially since activity choices and rates are known to be differentially affected by sex and age [15, 16].

However, certain health behavior theories, such as Social Cognitive Theory [8], can be effectively used to examine physical activity behaviors and outcomes. The social cognitive model is comprised of several psychosocial determinants for effectively examining health behaviors. For instance, it has been well documented that individuals who participate in physical activity regularly are more likely to have a greater sense of self-efficacy [17, 18] and positive, realistic outcome expectations [19-21] for the behavior at hand. It would be reasonable to assume that beliefs regarding the importance of physical activities, such as exercise, are likely to improve as an individual's confidence to successfully engage in such behaviors increases and, expected outcomes are eventually obtained, but this has yet to be determined. Thus, it is necessary to examine such constructs in relation to importance, as importance alone is not likely to significantly influence engagement in physical activity behaviors [8, 22].

The purpose of this study was to assess the extent to which participation in a 12-month exercise program changed the degree of importance that older adults attached to physical activity. Additionally, we were interested in how such changes may be associated with health-related outcomes and psychosocial constructs. Specific aims include: 1) examining whether the importance of physical activity in one's life changed as a result of participation

in an exercise program; 2) determining whether these changes were moderated by sex or exercise condition; 3) examining the associations among changes in importance of physical activity with changes in perceived functional limitations and quality of life indicators; and 4) examining the associations among changes in importance of physical activity with changes in self-efficacy and outcome expectations. It was hypothesized that physical activity participation, regardless of mode or sex, would lead to increases in the importance placed on physical activity. It was also hypothesized that changes in physical activity importance over time would be significantly associated with changes in health-related and psychosocial outcomes.

Methods

Participant Recruitment

An initial sample of 179 sedentary, older adults was recruited to participate in a 12-month exercise trial. Recruitment methods included newspaper advertisements, flyers, electronic newsletters, and local television and radio announcements. After initial contact, participants were screened for eligibility criteria [23], received medical clearance from their personal physicians, and signed and received a copy of an informed consent document. Upon acceptance to the program, participants were asked to complete a battery of self-report questionnaires including demographic, psychosocial, and physical activity measures at baseline, month six, and month 12. We report data from a final sample of 146 participants with complete data. All procedures and documents were approved by the University Institutional Review Board.

Exercise Intervention

Participants were randomized into one of two exercise conditions: a) a walking group ($n = 73$) or b) a flexibility, toning, and balance (FTB) group ($n = 73$). Exercise sessions were held three times per week and were led by qualified, trained exercise instructors. Full details of the intervention have been described elsewhere [23].

Walking Condition—Individuals in this condition participated in a group walking session, in which each member received a personalized exercise prescription based on the Karvonen Method [24]. The program began with a ten minute walking session for the first week, followed by a five minute increase in duration for each of the following weeks, until 40 minutes of continuous walking was attained. During these first few weeks, participants were asked to work at a specified intensity of 50-60% of their heart rate max. After the first eight weeks, the prescribed intensity was increased to 60-75% for the remainder of the program, while the duration of walking remained at 40 minutes.

FTB Condition—Participants in this group engaged in physical activities that were not aerobic in nature (i.e., flexibility, toning, and balance exercises). These participants had similar interactions with their exercise leader and research staff as the aerobic condition, and exercise classes lasted about 40 minutes, as well. The FTB group monitored their intensity by using the Ratings for Perceived Exertion scale [25, 26], and were asked to exercise within a range of 13 (i.e., somewhat hard) to 15 (i.e., hard).

Measures

Demographics—Basic demographic information was collected using a brief questionnaire which assessed sex, race, employment status, education, and income.

Importance of Physical Activity—The importance (or value) placed on physical activity was assessed using a single-item question. At baseline, participants were asked, “How important is physical activity in your life?” Then, at months 6 and 12, participants were asked, “How important is physical activity in your life now?” Participants responded to the question using a Likert-scale that ranged from 1, “Not at all important,” to 5, “Very important.”

Physical Activity—The Physical Activity Scale for the Elderly (PASE; [27]) was used to assess various types of activity that might be performed throughout the day, including participation in the exercise program. The PASE assesses both the frequency and duration of participation in activities of leisure-time and daily living. Leisure-time activities include engagement in light, moderate, and/or vigorous physical exercises or sports, while activities of daily living include items such as household cleaning or gardening.

Health-Related Quality of Life (HRQL)—The SF-12, a shortened version of the SF-36 Health Survey [28], was used to assess HRQL. Eight health concepts (i.e., physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health) were used to summarize measures of physical and mental health status.

Functional Limitations—Functional limitations were assessed using the 15-item subscale of the abbreviated Late Life Function and Disability Instrument (LL-FDI; [29]). This measure asks participants to rate how much difficulty they have performing a particular physical task (e.g., running a half mile or more, pouring from a large pitcher, getting into and out of a car/taxi) on a 5-point Likert scale ranging from 1, “none,” to 5, “cannot do.” Internal consistency for the measure in this study was acceptable ($\alpha = .87$)

Outcome Expectations—To assess outcome expectations for exercise in older adults, the nine-item Outcome Expectations for Exercise scale [30] was used. Participants responded to each item (e.g., “Exercise improves overall health”) using a five-point Likert-scale which ranged from 1, “strongly disagree,” to 5, “strongly agree.” Cronbach's alpha for this measure was excellent ($\alpha = .95$)

Self-Efficacy—McAuley's Exercise Self-Efficacy Scale [31] was used to evaluate participants' confidence in their ability to exercise at a moderate intensity for 40 or more minutes on a regular basis for up to six months. A 100-point percentage scale, which increased by ten-point increments, was used to determine one's level of confidence to successfully execute the behavior (i.e., 0%, “not confident at all;” 100%, “highly confident). This measure demonstrated strong internal consistency ($\alpha = .98$).

Data Analysis

A mixed model repeated measures analysis of variance was conducted to examine the effects of exercise condition, sex, and time on changes in importance. Pearson product-moment correlations were conducted to determine the associations among the residual change scores of physical activity importance with the residual change scores of self-reported physical activity, physical function, physical and mental health status, and self-efficacy and outcome expectations. All analyses were conducted using PASW (version 18.0; SPSS Inc., Chicago, IL).

Results

Sample Characteristics

The mean age of the total sample was 66.5 years ($SD=5.68$). The sample was primarily white (91.4%), female (66.2%), married (58.0%), and retired (47.0%). Additionally, a majority of the sample was well educated with 53.0% having earned a college or advanced degree, and 57.6% of the sample reported an annual household income of \$40,000 or greater. Supplementary demographic data, including descriptive statistics of health indicators for the study sample, have been reported elsewhere [32]. There were 17 non-respondents from baseline to Month 6; 22 from baseline to Month 12. Independent-samples *t*-tests comparing those remaining in the trial and those dropping out in the first six months and those dropping out in the second six months, respectively were non-significant ($ps > .05$). Interestingly, those with lower importance scores at baseline were more likely to drop out in the first 6 months ($p = .062$).

Changes in Importance

A repeated measures ANOVA was conducted to assess whether participation in the exercise trial increased the importance placed on physical activity. There was a significant linear and quadratic effect of time on importance, $F = 131.97$ (1.48,144), $p < .001$, with a moderate-large amount of variance accounted for, $(X0014B)^2 = 0.508$ and $(X0014B)^2 = 0.400$, respectively. These analyses revealed a significant effect of time on importance for the first half of the trial, $F = 157.21$ (1,150), $p < .001$, while there was no significant effect of time through the second half, $F = 0.02$ (1,145), $p = .893$. Next, we conducted a 2 (sex) by 2 (exercise condition) repeated measures ANOVA to determine whether the importance placed on physical activity was differentially affected by sex and exercise treatment over time. Results indicated that the mean changes in importance from baseline to Month 12 were similar with no significant effects of sex, $F = 0.60$ (1.45,141), $p = .496$, nor condition, $F = 0.06$ (1.45,141), $p = .890$. In addition, no interaction effect was found, $F = 1.59$ (1.45,141), $p = .212$.

Associations with Health-Related and Social Cognitive Factors

Residual change scores for all variables were calculated by regressing 6 and 12 month scores on baseline values. Correlational analyses were conducted among the residual change scores of the predictor and outcome variables (descriptive statistics provided in Table 1) to determine the relationships among changes in physical activity importance and changes in perceived function, physical health status, mental health status, and physical activity levels, as well as changes in self-efficacy and outcome expectations for exercise. These analyses revealed changes in the importance of physical activity during the first six months to be significantly associated with only changes in physical health status ($r = .171$, $p = .037$) and changes in outcome expectations ($r = .239$, $p = .003$). Changes in importance from baseline to Month 12 yielded no significant relationships. Associations among all residual change scores (i.e., 0-6 and 0-12 months) are documented in Tables 2 and 3.

Discussion

It has been suggested that the importance placed on physical activity may influence the relationships among, and changes within, associated health-related outcomes, yet evidence to support this relationship is limited and inconclusive. Thus, the purpose of the present study was to examine whether the importance of physical activity in one's life changed as a result of participation in an exercise trial and to examine the associations between changes in importance and changes in health outcomes (i.e., functional limitations and quality of life indicators), as well as changes in psychosocial factors (i.e., self-efficacy and outcome

expectations). Results indicate that involvement in a 12-month structured exercise program did, in fact, increase the importance that participants placed on physical activity. Positive changes in importance, as experienced by the participants, were similar for both males and females, as well as for both exercise conditions (i.e., walking and FTB) across time. Furthermore, the size of these effects over the course of the intervention was considerable. Therefore, engagement in a 12-month, structured physical activity program by previously sedentary individuals can, in fact, enhance the importance that they place on the behavior. However, this effect is greatest during the first six months of the program, followed by a plateau from Month 6 to 12. Given that the participants were sedentary prior to study enrollment, the introduction of regular physical activity participation was related to increases in perceived importance during the first half of the trial. Engagement in this new behavior may have led to an improved understanding of and appreciation for physical activity - due to actual or perceived physical activity-related benefits. The fact that there was no further change over the course of the second six months of the trial suggests maintenance in the groups' perceptions of physical activity importance. Interestingly, we noted that those individuals who dropped out within the first six months placed less importance on physical activity at baseline. Although this was not statistically significant ($p = .062$), it may be of some use to assess this construct in subsequent studies interested in adherence issues. Moreover, initial orientation sessions to physical activity programs might stress the multiple factors that physical activity can influence.

Furthermore, changes in physical activity importance were minimally associated with changes in health status and well-being in older adults. There was a significant positive association between changes in importance and changes in perceived physical health status midway through the exercise program. One likely reason for this relationship may be that physical health status is more salient in older adults, and as people age, their physical health tends to become more of a concern. This sample of older adults, however, was relatively healthy, which may have attenuated some of the relationships between the importance placed on physical activity and the other health-related constructs. Whether such relationships are evidenced more strongly in those with diseases or disabilities remains to be determined. An alternative explanation [33] is that physical activity is a multidimensional concept with several subsets based on the influential value of physical activity for the individual (e.g., social experience, aesthetic experience, health). Thus, it is possible that non-health-related factors may have dictated participation and the importance of improving one's health may not have been the primary reason for exercise participation in this particular cohort. Participants may have placed more value on factors such as social experience, for example, rather than physical health [34, 35].

Finally, there was a significant, moderate association among the residual changes in importance and outcome expectations experienced by this sample of older adults from baseline to Month 6 only. That is, individuals who placed greater importance on physical activity during the first six months of the trial also reported more positive expectations for health outcomes. It is likely that the realization of the participants' baseline outcome expectations through participation in the exercise program could have positively influenced the importance that these individuals attached to physical activity in general. These changes in importance, however, were not significantly related to changes in self-efficacy for exercise. This may be due to the fact that self-efficacy deals with one's belief in his or her own ability to successfully execute a given task, and such tasks, even though they may be viewed as important for a variety of reasons, will not necessarily influence the importance associated with it if the individual does not have the confidence to effectively accomplish it.

It is acknowledged that this study has a number of limitations that should be taken into consideration. First, the importance of physical activity was assessed using a single-item

question. Future endeavors might consider using the Perceived Importance Profile (PIP; [36]). The PIP assesses the extent to which one values or places importance on physical condition, physical strength, sport competence, and body attractiveness. Summing the scores from each subdomain can provide an overall estimate of physical activity importance. In addition to this concern over the single-item question, there is a chance that participants may have interpreted and responded to the question differently during months 6 and 12 (in comparison to the importance question asked at baseline), as the ending to the question used changed slightly and could have been viewed as somewhat leading (i.e., “How important is physical activity in your life?” vs. “How important is physical activity in your life *now*?”). Another study limitation included the fact that the sample was relatively homogenous and healthy (e.g., predominantly white, female, well-educated, etc.); therefore, some caution should be used when interpreting the results of this study and applying them to other populations of varying demographics (e.g., underserved/disadvantaged groups). Such groups may very well value physical activity and its related outcomes, yet actual engagement in the behavior itself might be limited or even non-existent due to a variety of socioeconomical factors (e.g., safety, resources, accessibility; [37]). Finally, we limited the measurement of importance to physical activity in general. Examining the importance placed on other physical activity-related factors, such as the social aspects of the behavior or its health-related outcomes, for example, may be of future interest to researchers wishing to further examine the relationship between the construct of importance and physical activity participation.

Although significant associations between importance and the psychosocial and health-related outcomes of this study were limited, we believe that there is still value in assessing the importance of physical activity. First, the continuous assessment of this construct is warranted as it could be useful for predicting other physical activity-related outcomes [38], such as enjoyment, goals, or intensity, for example. In order to better understand shifts in physical activity importance, future research should also consider the cultural and social context in which older adults live, which are likely to influence the values or importance placed on specific behaviors, such as physical activity [5]. Furthermore, the assessment of importance and its relation to health in more diverse populations is certainly warranted, as various subgroups of the population may exhibit different activity preferences and/or beliefs. For example, Dergrance and colleagues [39] assessed exercise-related beliefs and patterns in Latinos and found that although their study sample was well aware of the importance of exercise-related outcomes, most participants still chose to actively avoid engagement in that behavior. Thus, there is a need to better understand the importance of physical activity in various subgroups, as findings may differ greatly from those reported here. Finally, when examining the role of importance, researchers should focus their assessment on specific domains of physical activity, the type/mode of physical activity, or specific outcomes related to behavior itself.

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Table 1

Descriptive Statistics for Study Variables

Variable	Month 0		Month 6		Month 12	
	Walking	FTB	Walking	FTB	Walking	FTB
Importance	3.16 ± 1.12	3.17 ± 1.08	4.28 ± 0.81	4.30 ± 0.85	4.27 ± 0.82	4.30 ± 0.81
Physical Activity	121.53 ± 64.55	132.48 ± 61.13	147.81 ± 59.40	166.05 ± 76.42	133.82 ± 54.61	159.63 ± 78.41
Physical Health Status	47.97 ± 8.19	48.49 ± 8.49	46.98 ± 8.98	48.65 ± 8.35	47.66 ± 7.89	47.38 ± 9.77
Mental Health Status	54.22 ± 7.61	53.21 ± 8.07	55.04 ± 6.60	52.52 ± 8.83	55.46 ± 6.09	51.28 ± 10.62
Functional Limitations	65.67 ± 6.55	65.80 ± 6.64	65.27 ± 6.00	66.44 ± 7.61	65.83 ± 5.92	65.96 ± 7.56
Outcome Expectations	4.35 ± 0.63	4.50 ± 0.48	4.36 ± 0.61	4.53 ± 0.45	4.28 ± 0.64	4.48 ± 0.50
Self-Efficacy	86.20 ± 18.05	79.61 ± 19.72	84.53 ± 16.31	78.44 ± 22.82	68.06 ± 29.14	62.24 ± 26.06

Note: FTB = Flexibility, toning, and balance exercise condition

Table 2
Correlations among the 6-Month Residual Change Scores

Variable	1	2	3	4	5	6	7
1) Importance	1.00						
2) Physical Activity	0.09	1.00					
3) Physical Health Status	0.17	*	1.00				
4) Mental Health Status	-0.01	0.08	-0.32	†	1.00		
5) Functional Limitations	0.06	-0.07	0.27	†	-0.03	1.00	
6) Outcome Expectations	0.24	†	0.13	-0.02	0.17	*	1.00
7) Self-Efficacy	0.12	-0.05	0.20	*	0.14	-0.02	1.00

* Significant at $p < 0.05$

† Significant at $p < 0.001$

Table 3
Correlations among the 12-Month Residual Change Scores

Variable	1	2	3	4	5	6	7
1) Importance	1.00						
2) Physical Activity	0.09	1.00					
3) Physical Health Status	-0.15	0.17	*	1.00			
4) Mental Health Status	0.06	-0.05		-0.42	†	1.00	
5) Functional Limitations	-0.11	0.28	†	0.47	†	-0.19	*
6) Outcome Expectations	0.02	0.06		0.12		-0.09	1.00
7) Self-Efficacy	0.03	-0.13		0.26	†	-0.15	†
						0.18	*
						0.13	1.00

* Significant at $p < 0.05$

† Significant at $p < 0.001$