

## Motivating mature adults to be physically active

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### **Abstract:**

As a population, middle-aged and older adults are not meeting national guidelines for exercise. The purpose of this study was to describe factors associated with exercise adherence in an 8-month program offered as part of a research study testing the effects of exercise on cognitive performance for persons with a family history of Alzheimer's disease (AD). After completion of the program, participants provided open-ended responses indicating their reasons for adhering to the exercise program, and they completed the Motives for Physical Activities Measure-Revised. Results indicated that adherence was tied to an interest in contributing to our understanding of AD, the opportunity to join an exercise program, perceived exercise benefits, and social support. In addition, participants reported high levels of extrinsic (fitness-related) and intrinsic (interest/enjoyment) motivation. Other possible motivating factors which emerged from day-to-day observations in the program were identified. Findings suggest directions for exercise professionals with respect to exercise adherence.

**Keywords:** adherence | exercise | older adults | Alzheimer's disease

### **Article:**

Despite national efforts to encourage physical activity participation, considerably more work is needed to motivate adults in the United States to become physically active and to remain physically active over time (Haskell et al., 2007). This is evidenced by results from the latest Behavioral Risk Factor Surveillance System survey (Centers for Disease Control and Prevention, 2013), which indicated that just 51.6% of adults met the aerobic activity recommendation (at least 150 min of moderate aerobic activity, at least 75 min of vigorous aerobic activity, or an equivalent combination of the two each week), and only 29.3% of adults met the muscle-strengthening recommendation (exercising each of the major muscle groups at least twice per week) as outlined in the 2008 Physical Activity Guidelines for Americans (Centers for Disease Control and Prevention, 2013). Further, only 20.6% (range: 12.7-27.3%) of adults met *both* the

aerobic and muscle strengthening recommendations (Centers for Disease Control and Prevention, 2013). Even more alarming is the low percentage of middle-aged and older adults who met both the aerobic and muscle strengthening guidelines (18.7% for those 45-54 years of age; 17.1% for those 55-64 years of age) (Centers for Disease Control and Prevention, 2013).

In response to these relatively low numbers of individuals meeting national guidelines, efforts have been directed toward understanding how to best promote adherence to an exercise program. When participants are asked to take part in an exercise program as part of a research study, adherence rates to the exercise tend to be generally high as compared with reports that approximately 50% of individuals drop out within the first 6 months of an exercise program (Dishman, 1982). For example, narrative reviews of the empirical literature suggest that exercise attendance for older adults in exercise programs ranges from 58-77% (McPhate, Simek, & Haines, 2013; Nyman & Victor, 2012; Picorelli, Pereira, Pereira, Felicio, & Sherrington, 2014). To summarize this evidence, Hong, Hughes, and Prohaska (2008) conducted a meta-analysis in which they reported an average attendance rate of 86% in 37 randomized controlled trials (RCTs) with older ( $M = 68.4$  years) adults over 6 months. Given these relatively high rates of adherence reported in research-based exercise programs, it is important to consider the factors related to research interventions that might inform professionals as to how to best promote physical activity adherence in their own programs.

Hong et al. (2008) were able to consider these factors by examining moderating variables in their meta-analysis. Results from their review indicated that attendance was higher when exercise was offered in a group format and had a focus on resistance exercise (rather than aerobic exercise). They also reported that adherence decreased with longer programs. The findings with respect to these variables are important and suggest the value of offering group exercise programs and including resistance exercise; however, it is important to note that when reviewed meta-analytically, researchers are only able to use as moderators those variables which are clearly described in a substantial number of the individual empirical studies. Hence, we do not have a good understanding of additional more unique or study-specific factors that may inform efforts to promote physical activity.

As additional guidance in this area, it is worthwhile to consider theories of motivation that have been proposed to explain behavior. From one point of view, motivation for participation in physical activity has been judged as being due to interest and enjoyment, the desire to appear competent, and goals related to improvements in appearance and fitness (Frederick & Ryan, 1993). Although not fully overlapping, these motives are consistent with Deci and Ryan's (1985) proposal that motivation exists along a continuum from intrinsic to extrinsic. Frederick and Ryan (1993) specifically indicate that interest/enjoyment is closely tied to intrinsic motivation, competence is related to challenge seeking, and body-related factors represent extrinsic motivation. One purpose of this study was to adopt this framework to describe the motives for participation that were evident in a sample of middle-aged and older adults participating in a research-based group exercise program. A second purpose of this study was to elucidate additional motives that might be study-specific and/or specific to the exercise program being administered as part of a research study, but which might also provide direction for exercise professionals interested in additional avenues to promote exercise adherence. This second purpose was pursued by asking an open-ended question regarding why the participants had

chosen to regularly attend the exercise program and by observations of the exercise program provided by the program staff.

We completed a National Institutes of Health funded exercise study with healthy, cognitively normal adults (50-65 years old) with a family history of Alzheimer's disease who did not meet the definition of regularly active based upon the 2008 Physical Activity Guidelines for Americans (Etnier et al., 2015). The purpose of the parent study was to examine the effects of a physical activity program on various psychological and physiological outcomes, and to assess potential genetic moderators of these effects (i.e., genetic risk for Alzheimer's disease).

In this paper, we describe our participants' self-reported reasons for adhering to the exercise program, and we propose specific factors which may have positively affected participants' motivation to adhere to an 8-month physical activity program offered as part of a research study. Guided by the findings of Hong et al. (2008), the exercise was administered in a group exercise format and included both aerobic and muscle strengthening activities. Hence, the goal of this study was to identify additional factors that might be important for exercise adherence by middle-aged and older adults beyond those identified through meta-analytic review.

## **Methods**

Data for this study were collected following completion of a parent study focused on the effects of an 8-month physical activity intervention on cognitive performance by middle-aged and older, sedentary, cognitively-normal adults with a family history of Alzheimer's Disease (AD). Full details regarding the parent study design have been published previously (Etnier et al., 2015). A brief overview of the parent study is described herein with additional details provided as relevant to this study.

### **Parent Study Overview**

Middle-aged and older, sedentary, cognitively-normal adults between the ages of 49-65 years and with a family history of AD were recruited to participate. Sedentary was defined as performing < 30 min of moderate intensity physical activity < 5×/week for the past 3 months. Cognitive normality was determined using the modified Telephone Interview for Cognitive Status and the Folstein Mini-Mental Status Exam. A family history of AD was defined as having one first degree (mother, father, sister, brother) or two second degree (grandparent, aunt, uncle, niece, nephew) relatives diagnosed with AD. This recruitment strategy was used to identify a sample of people who were not yet experiencing any symptoms of AD and were young enough to not have preclinical symptoms of AD, who because of their family history of AD might be expected to have a genetic risk for AD, and who would be expected to benefit from physical activity because of their current low activity levels.

We recruited 136 participants who completed a telephone interview to determine if they were eligible for the study. Of these, 80 participants were deemed eligible for the study and 66 of these completed baseline testing. From these, 54 were eligible after baseline testing and agreed to enroll in the 3-day-per-week physical activity program for 8 months conducted on the university campus. These participants began the exercise program in three cohorts. Immediately before the

start of their exercise program, participants completed pretesting. They then started the 8-month exercise program. Initially, participants walked for 15 min and did resistance training for 30 min, but this increased gradually to 20 min of walking and 35 min of resistance training by the end of the second month. Duration was then maintained throughout the remainder of the program, but walking speed and levels of resistance were individually progressed in response to gains in fitness. Testing occurred again at the 4-month time-point (midtest) and at the end of the program (posttest). At the baseline, pre, mid, and posttest, participants completed a self-report measure of physical activity and performed a battery of cognitive tests. At pre, mid, and posttest, participants also had their blood drawn and performed a submaximal fitness test. Participants received a parking pass every day they were on campus, a \$10 gift card after each testing session, and a \$10 gift card for every month of exercise in which they achieved  $\geq 75\%$  attendance. The total remuneration possible was \$120 for all testing and the 8-month exercise program.

## Participants

For the study reported here, we contacted 44 of our exercise program participants (contact information was no longer accurate for three participants and seven did not return our calls) via a computer-based survey to ask them what motivated them to continue their participation in the exercise program. This contact was approved by the university's institutional review board, and all participants gave their consent to be included in this research. Thirty-five (80%) of the 44 participants responded to our survey.

## Adherence

Completion rate was calculated as the number of people who participated in the exercise program and completed all of the testing sessions (completers) relative to the total number of people who began the exercise program. For completers, adherence was calculated as the number of exercise sessions attended relative to the prescribed number of exercise sessions (Hong et al., 2008). Seven participants dropped out of the exercise program, resulting in a completion rate of 87%. We have no evidence to suggest that these dropouts represented any systematic drop-out problem related to the program or testing. Participants dropped out of the study for reasons such as increase in responsibilities at work ( $n = 3$ ), injuries that were incurred outside of the exercise program ( $n = 2$ ), and personal reasons that were not disclosed ( $n = 2$ ). After removing data for these seven drop-outs from the analyses, adherence to the exercise sessions was high (average attendance rate = 76%). Of note, our adherence calculations included participants who missed consecutive exercise sessions for previously planned vacations or job-related activities for 1-12 weeks ( $n = 3$ ) and participants who missed the last 1-2 weeks of the program ( $n = 6$ ) or the last 7 weeks of the program ( $n = 1$ ) but still returned for the posttest.

## Measures

Participants were asked an open-ended question which asked them to identify the three top reasons they stayed committed to attending the exercise sessions. In addition, they completed the Motives for Physical Activities Measure-Revised (MPAM-R) questionnaire, which required them to rate 30 statements describing reasons why people engage in physical activities using a 1-7 visual analog scale (1 = not at all true for me and 7 = very true for me) (Frederick & Ryan,

1993; Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997). Data from the MPAM-R result in five subscale scores, which are interest/enjoyment, skill development, fitness, enhancement of body appearance, and social (Frederick & Ryan, 1993). These subscales have been shown to be both reliable and valid (Frederick & Ryan, 1993). The interest/enjoyment subscale is thought to be representative of self-determination, and skill development is representative of challenge as proposed by Deci and Ryan (1985). The subscales of fitness, enhancement of body appearance, and social are representative of aspects of extrinsic motivation. Research with older women has shown that the subscales from the MPAM-R have differential relations with the psychological needs of competence, autonomy, and relatedness and, hence, is a useful tool for “understanding the motives regulating physical activity behavior” (Wilson, Rodgers, & Fraser, 2002, p. 475).

## Analyses

Responses to open-ended questions were subjected to a qualitative content analysis whereby the primary author read all of the responses several times before highlighting words that were thought to be representative of key concepts. These key concepts were then sorted into emergent categories that were then interpreted relative to motivational theory (Hsieh & Shannon, 2005). Responses to questions from the MPAM-R were averaged to calculate a single score for each subscale. These results are described relative to one another and are interpreted relative to the anchors provided on the survey.

**Table 1.** Exemplars of Responses and the Corresponding Key Concepts

<b>Response</b>	<b>Key Concept</b>
Participate and assist with research involving Alzheimer disease.	Contribute to research
In memory of mom.	In memory of someone with AD
I lost my loving mother to Alzheimer’s; therefore I am interested in any way that I can possibly contribute to the research of Alzheimer’s.~	Have someone with AD
I try to be very dependable. If I say I am going to do something, I will do my best to see it through.	Commitment
It was taking place not far from where I was working.	Accessibility of exercise
Initially, I was attracted by the chance to participate in a directed exercise class at the very reasonable rate of free.	Free exercise
I wanted to get into a regular exercise routine and this seemed like a good opportunity to do so.	Regular exercise
To improve my personal fitness.	Improve fitness
I lost 12 pounds and was pleased with a better body profile.	Lose weight
I love exercising	Enjoy exercise
During the sessions I actually felt better mentally and physically.*	Mental health benefits
I quickly experienced some rewarding physical improvements.	Physical health benefits
I was interested in the study and the information it may provide me concerning my health.	Health information
I am concerned that I might develop the dementia that my mother had.	Protect against AD
I enjoyed the workouts and socializing with the other members.	Social (general)
Sharing time and emotions with those who had been affected by Alzheimer’s.	Social (AD)
I enjoyed the motivation provided by a community of others I met there.	Group motivation
Enjoyed getting to know the research staff.	Instructors
To spend some time with my sister. [who was also in the program]	Spend time with family member
My wife made me do it.	Told to exercise
Good transition to my retirement status at that time.	Retirement transition
I got some reimbursement for my time.	Reimbursement

I liked the facilities.	Facilities
The group was an excellent source of encouragement and we had a competitive edge which was the constant draw. Yes, competition!	Competition
I love exercising.	Enjoy exercise

*Note:* ~ This response was also coded as Contribute to research; \* this response was also coded for Physical health benefits. AD = Alzheimer's disease.

## Results

Key concepts and categories identified from the open-ended responses are shown in Table 1. Responses from the open-ended questions (see Table 2) showed that the most commonly identified category of responses given for continuously attending the program was because of an interest in contributing to efforts related to AD (38 responses) and that this was largely driven by a specific interest (key concept) in contributing to research on AD (30 responses). The next two most-identified categories of reasons were for social reasons (29 responses) and because of the expected benefits associated with participating in an exercise program (27 responses). The next most identified category of reasons was because of the opportunity to exercise (22 responses).

**Table 2.** Number of Responses Identified as Representing Key Concepts and Categories

Key Concept	Reason			Category	Reason		
	#1	#2	#3		#1	#2	#3
Contribute to research	18	8	4	Interest in AD	22	9	7
In memory of someone with AD	0	0	1				
Have someone with AD	4	1	2				
Commitment	8	2	0	Commitment	8	2	0
Accessibility of exercise	4	3	3	Opportunity to exercise	5	9	8
Free exercise	1	0	1				
Facilities	0	0	2				
Regular exercise (habit, routine)	0	6	2				
Improve fitness	1	2	0	Exercise benefits	4	12	11
Lose weight	1	1	1				
Enjoy exercise	0	3	3				
Mental health benefits	0	3	3				
Physical health benefits	1	2	3				
Health information	1	0	0				
Protect against AD	0	1	1				
Social (general)	2	3	8				
Social (AD)	0	3	3				
Group motivation	0	1	0				
Instructors	0	1	6				
To be with a family member	1	0	1				
Told to exercise	1	0	0	Miscellaneous	Not calculated		
Transition to retirement	0	1	0				
Reimbursement	0	1	0				
Competition	0	0	1				

*Note:* AD = Alzheimer's disease. Totals may be larger than the total number of participants because some responses included more than one key concept and/or could be coded into more than one emergent category.

Results from the MPAM-R showed that participants rated fitness ( $M = 5.52$ ,  $SD = 1.36$ ) and interest/enjoyment ( $M = 4.93$ ,  $SD = 1.63$ ) as highest, followed by competence ( $M = 4.41$ ,  $SD = 1.55$ ), and then by appearance ( $M = 4.02$ ,  $SD = 1.67$ ) and social reasons ( $M = 4.01$ ,  $SD = 1.96$ ). Given the anchors for this scale, these values suggest that the participants viewed fitness, interest/enjoyment, and, to a slightly lesser extent, competence as being accurate descriptors of their reasons for participating, but were neutral with regard to the extent to which appearance and social reasons described their reasons for participating.

## Discussion

This study was designed to provide insights into why participants would remain committed to participating in an 8-month physical activity program that was offered as part of a research study. Importantly, this physical activity program was being conducted with the explicit purpose of advancing our understanding of the potential benefits of exercise for persons at genetic risk for AD. Given this purpose, it is perhaps not surprising that the most frequently given reason that participants provided for why they were committed to attending the exercise program was because of an interest in contributing to research on AD. In fact, the number of responses to this single *key concept* was higher than the number of responses to any other emergent *category*. Clearly, this might explain why adherence rates are typically relatively large in exercise interventions conducted as a part of a research study (range: 58-77%). That is, because participants have vested interest in the outcomes of the research (e.g., in this study they were recruited because of a family history of AD), they are highly motivated to remain involved.

In terms of providing guidance to exercise professionals aiming to promote physical activity, our results suggest that adherence to group physical activity programs for middle-aged and older adults might be enhanced if such programs are built around specific outcomes that are important to participants. For example, our program solicited individuals with a family history of AD, and people were interested in whether our exercise protocol might affect aspects of AD prevention. This is evidenced by one response from a participant who said, “It was for a good cause due to the fact that my family has a history of memory loss and it would be nice to know if exercise actually will help prevent this memory loss.” It is important to recognize that this is not the same concept as group aerobic exercise programs being built around a type of aerobic exercise (e.g., Zumba classes, step classes, spinning classes) or total fitness programs being built around a type of exercise (e.g., boot camps, high-intensity interval training). Although people may be interested in trying specific or novel types of exercise they have heard about, our data suggests that it may be the connection between the exercise and the relevant outcome for that individual that is associated with a high-level of adherence. For instance, how exercise can directly impact an important health concern for middle-aged and older adults.

An additional related finding is that participants valued the social support they received in the program in a general sense ( $n = 13$ ), but a number of them ( $n = 6$ ) also reported that they adhered to the program because of the AD-related social support they received. While the program was not specifically designed to encourage this type of social structure, we believe the nature of the program (i.e., focus on outcomes related to AD and cognitive function) fostered the growth of these relationships. Having a family history of AD was a main criterion for inclusion in the program. Therefore, from the first day of the program, the participants knew they shared deeply

personal health concerns and/or experiences with each other. This is exemplified well by this explanation for staying committed to the exercise program: “Sharing time and emotions with those who had been affected by Alzheimer’s”. We feel as though this may have been a powerful contributor to the participant’s commitment and adherence to the program, and this might suggest that exercise groups formed around a common health concern may be particularly attractive to middle-aged and older adults.

In addition to the above, our data suggest that a number of middle-aged and older sedentary people want to participate in exercise because of the perceived benefits of exercise. In particular, on the MPAM-R, participants rated fitness as the most important benefit of the exercise program and on the open-ended responses; the expected benefits from the program (including mental health, physical health, weight loss, improved fitness, enjoyment, health information, and to protect against AD) were identified second most frequently as a reason to stay committed to the program. Clearly these findings support the benefits of explaining to middle-aged and older adults the benefits they might expect to receive as a part of program participation. They may also have implications in terms of feedback being provided to participants. As previously mentioned, Hong et al. (2008) reported that adherence was highest for resistance training programs. One possible reason for this is because gains in strength are readily apparent due to the requisite changes in equipment (e.g., changing to a more resistant exercise band). Thus, it may be important for professionals to emphasize the real benefits that participants are receiving by pointing out improvements in strength, aerobic capacity, sleep quality, or other outcomes of relevance to the group.

Close behind fitness, respondents indicated on the MPAM-R that they stayed committed to the program because of their interest/enjoyment. This is the highest level of intrinsic motivation as per Deci and Ryan’s motivational continuum (1985) and is exemplified by this response: “I love exercising, I love exercising in a group and I love meeting new people with common interests/motivations.” This finding may seem counter-intuitive given that participants were required to be sedentary to participate in the exercise program. In other words, these individuals expressed high levels of interest/enjoyment for exercise, but were not motivated enough to start or adhere to a program before entering our study. This may tie closely with the results indicating that having the opportunity to exercise was identified as a reason to stay committed to the program. This included such points as the exercise program fitting their schedules, being offered for free, being conducted in a quality facility, and allowing an opportunity to be a more regular exerciser. In combination, these findings suggest that these sedentary individuals were not failing to exercise because of amotivation, but rather that they were making this choice because of the lack of availability of a program that suited their needs. For exercise professionals, we believe this reinforces the need for low-cost programs offered by skillful personnel in quality facilities and at flexible times. Of note, only one respondent indicated that “being reimbursed” for time was a motivator for adherence. However, because we did not specifically ask participants if the \$10 monthly gift card for adherence was a motivator for them, the extent to which this might have contributed to the relatively high adherence rates observed in this study is unknown. That being said, it seems telling that of the 126 responses to open-ended questions, only one focused on the nominal reimbursement (equating to < \$1 per hour for exercise) we offered. As such, in this retrospective assessment of motivation, it appears that the monthly gift cards were not the most compelling reason for adherence.

In addition to the empirical data provided herein, we believe it is important to also describe observations made by program staff based upon day-to-day experience and close observations regarding participants in the exercise program. We believe this information may be informative for professionals considering physical activity program adherence issues.

One observation relates to the known exercise barrier of a lack of knowledge (Schutzer & Graves, 2004). There were three ways in which knowledge was provided to exercise participants that may have contributed to their adherence to the study. First, the exercise leader provided the group with information about preventative health at almost every exercise session. This instruction typically took place between exercise sets during the group resistance training portion of the program. Sometimes, this instruction was a result of a personal question raised by one of the participants, a result of a current health-related news story of interest, or other health or performance-related information we thought might be useful to the participants. This finding is reflected in a participant response as follows: “So enjoyed Dr. Karper’s leadership and humor and more often than not I came away having been enlightened about exercise or exercise theory or the community or the weather or something!” In this regard, it should be noted that because our research dealt with AD, there was never any discussion of issues surrounding this particular topic because that type of discussion might have led to changes in behavior (e.g., changes in diet or supplement usage to benefit cognition) that would have confounded our controlled study on exercise. Rather, discussion often centered on general nutritional concerns, principles of weight management, stress reduction, health-related environmental concerns, and the interactions between and side-effects of various medications. Importantly, we always stressed that the information was evidence-based and references were often provided. Second, participants were taught about exercise and physical activity with demonstrations on exactly how to execute various movements (exercises and movements which interested them other than just the ones in our protocol) and how to make adjustments concerning exercise-related injuries and other types of pain. Third, numerous questions were answered about training for sport and dance performance especially relative to participants’ children and grandchildren. Regarding all of the above, the exercise leader and the rest of the project team functioned as healthcare-related resources. If necessary or requested, participants were referred to allied health care and medical providers in the local community who had special expertise concerning their unique healthcare needs and the needs of their families.

Given that 72% of internet users report they searched for health information online in the past 12 months, 19% of smartphone owners have used a health-related app, 31% of cell phone owners have accessed health information on their phone, and 60% of U.S. adults say they track personal health-related information online (Pew Research Center, 2015), it is easy to conclude that numerous American adults appear to be interested in health. From our communication with our participants, it was apparent that they were no exception. They always seemed to value the health-related discussions, sometimes carrying a given topic forward to the next exercise session. We speculate that this program component may be an important missing link regarding attendance in middle-aged and older adult group exercise programs and that including it should be strongly considered by others who offer these types of exercise programs. People are often searching for understandable health information and explanations related to health and performance issues happening in their families, issues mentioned by friends, or reports by the

news media. Providing this information and explanations during an exercise program may be a powerful motivator regarding program attendance decisions by the participants. This may be especially true when the information and explanations are personalized and offered by kinesiology professionals.

An additional relevant point is that the program was conducted with a sense of humor with regard to the inevitable instances of human error. When mistakes were made during any part of the program, for example, if the exercise leader mistakenly began to demonstrate an exercise the group had not yet been taught, we never were defensive and always emphasized the humorous aspects and ineptness of the mistakes. We were always self-deprecating, but never at the expense of a participant. This always seemed to lighten the mood for the group members while they were concentrating to work through the often challenging resistance exercise protocol. This is exemplified by one reason for participation that was cited in the open-ended responses—one participant wrote, “I also really liked Dr. Karper (he was a hoot!)” While not assessed, it is also plausible that this pedagogical methodology helped to reduce fears, anxiety, or concerns related to performing exercises in a group setting. Naturally, this kind of program presentation can only take place if exercise instructors have the confidence (personally and professionally) to not take themselves too seriously, to recognize their own fallibility, and to humorously deal with the random and absurd situations which often develop, such as custodians bringing construction materials into the exercise area during the group program and hammering them into place.

Finally, the intensity level of each exercise was individualized to the participant. For instance, during the program we regularly recorded heart rates at rest and after 10 min of walking (aerobic portion) for use in calculating new target heart rates, and we individualized the resistance that participants used during strength training. We also took into consideration variations in their day-to-day ability. For example, on some days certain participants completed less work than during the previous session because they just could not produce as much output that day. By contrast, we also encouraged participants to challenge themselves to work hard. While we never pushed anyone past their physical capabilities, during the walking portion of the program, we often joked with participants to motivate them to pick up the intensity. This was a well-received method of engagement with the participant that helped to keep their spirits high.

In sum, the results from this study indicate that the relatively high levels of adherence were driven by participants’ interests in contributing to our understanding of AD, the opportunity to join an accessible regular exercise program, the perceived benefits of the exercise program, and the social support garnered through the group exercise format. In addition, the participants expressed relatively high levels of extrinsic (fitness-related) and intrinsic motivation (interest/enjoyment) for participation. Lastly, we have identified various program factors observed by the program staff that we believe might have also contributed to the high levels of adherence. Future research is needed to test these and other factors that may influence adherence rates in group physical activity programs aimed at middle-aged and older adults. While the exploration of health-related outcomes should be included in future work, the use of adherence data in hypothesis testing would greatly increase our understanding of how to design physical activity programs that people want to initiate and maintain. For example, the hypothesis that participant-shared interest in a specific health-related outcome is a significant factor in determining adherence could be tested. By using recruitment methods to target healthy

participants with specific family health histories (e.g., diabetes, heart attack), and randomly assigning them to a program that is described as either being connected with diabetes, heart attack, or a control program that is described as being connected with general health and wellness, we could assess differences in adherence rates based on the program description. Filling the gap in knowledge by investigating the reasons participants adhere to a physical activity program would produce valuable information for exercise scientists and for exercise professionals who want to design programs to attract and retain greater numbers of participants.

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