Factors in Exercise Adherence: Influence of Spouse Participation

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Adherence rates to exercise programs continue to average 50%, despite efforts to improve this figure. Cognitive and behavioral strategies can modestly enhance adherence, but in some cases, they fare no better than placebo treatments. In contrast, forms of social support more consistently benefit exercise adherence, although this research has largely focused on cardiac patients. This paper presents the results of a study examining the influence of spouse participation on adherence of healthy adults to a 12-month fitness program. Adherence was contrasted between 30 married participants who enrolled in the program alone (married-singles) and 32 participants who enrolled with their spouse (married-pairs). Mood state and self-motivation were assessed at the outset to determine if adherence was independently associated with these variables. At the end of the study, it was found that 6.3% of the married-pairs had dropped out compared 43% of the married-singles (p < 0.05). Differences in the psychological variables were not observed between groups.

The need for establishing effective means to enhance the level of physical activity in the general population and to maintain adherence to exercise programs has never been more critical. By some estimates, fewer than 10% of adults regularly participate in vigorous exercise on a regular basis, whereas over 25% do not exercise at all (Caspersen & Merritt, 1995). On average, 50% of individuals who begin exercise programs will fail to adhere, with the majority dropping out within the first six to eight weeks (Dishman, 1988). From 1991 to 1998, the percent of adult Americans classified as medically obese has risen by 49.2% (Mokdad et al., 1999). Paradoxically, during this same period, the number of fitness clubs in the United States has increased by a similar percentage of 40.4% (IHRSA, 2000) and the correlation between these two trends approaches unity (see Figure 1). While it would be inappropriate to imply that this relationship is causal in nature, the finding does suggest that the linked problems of sedentary behavior and increased obesity will not be resolved simply by building more exercise facilities. Moreover, the types of activities offered in fitness clubs have sometimes contributed to the adherence problem. For example, a 20-minute per week fitness program called Super Slow has recently received considerable attention in the national press as a faster and more efficient means to improve cardiovascular and muscular fitness.

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compared with conventional aerobics or strength training regimens (Cowley & Springen, 2001; Kazar, 2001). The developer of Super Slow, Ken Hutchins, predicted that “in three to five years, all of the aerobics will be swept away” with Super Slow resulting in “a major paradigm switch” (Kazar, 2001, p. 3). A study comparing the fitness benefits of Super Slow to a conventional weight training program in middle-aged adults did find greater strength gains in the Super Slow condition (Kazar, 2001). However, at the completion of the eight week intervention, only one of the 74 participants in the Super Slow condition intended to continue with the program, a 1.4% adherence rate! This example illustrates that providing the consumer with a time-saving exercise program will not necessarily lead to greater compliance. A lack of time for exercise is consistently cited as the chief reason why people drop out, and time management techniques have been promoted as a means to help hard-pressed individuals find sufficient free time for physical activity (Gettman, 1988). However, even environments with a minimum of time constraints will not necessarily benefit adherence. One example is the report that prisoners enrolled in supervised exercise programs were found to have adherence rates ranging from 55% to 57% (Morgan, 1977), and these proportions do not differ from those commonly reported for studies involving adult fitness programs in general.

Commonly, research has found that cognitive and behavioral interventions only result in modest improvements in exercise adherence. For example, self-efficacy has been promoted as a means to increase physical activity and enhance adherence. Research does indicate that high self-efficacy is associated with adoption of exercise programs, but its effect on the maintenance of activity is smaller (McAuley & Blissmer, 2000). Educational programs have been widely implemented in the attempt to provide information regarding the benefits of physical activity and create positive attitudes toward exercise programs. The beneficial consequences of such interventions are supported by theories of exercise behavior, including...
social learning theory, protection motivation theory, and the health belief model. Each of these theories emphasizes the importance of rational decision-making processes whereby an individual weighs the potential costs and benefits of exercise (Godin & Shephard, 1990). Accordingly, it is predicted that adherence will be comparatively higher in persons with an increased personal health risk (e.g., elevated blood pressure) or who have conditions that benefit from increased physical activity (e.g., coronary artery disease), particularly given that health benefits could be accrued with a relatively mild regimen. However, in a summary of adherence studies involving several thousand adults, Franklin (1988) found that the dropout rate of patients enrolled in exercise programs for cardiac rehabilitation was essentially identical to the rate for healthy adults enrolled in exercise programs for the purpose of general fitness and health (44% vs. 46%, respectively). The grim conclusion to this finding is that a serious threat of mortality is not sufficiently motivating to improve exercise adherence.

**A Role for Social Support in the Form of Spouse Participation**

Research has shown that forms of social support can sometimes result in enhanced exercise adherence. In the case of a study involving over 200 men enrolled in a medically based exercise program (Heinzelmann & Bagley, 1970), it was found that adherence as measured by high attendance averaged 80% for men whose spouse had a positive attitude toward the exercise program. In contrast, adherence dropped to 40% for men whose spouse had either a neutral or negative attitude toward the program. This finding is notable in that research indicates that possessing a positive attitude toward physical activity often has a negligible effect on one's own exercise adherence (Sonstroem, 1988). Other studies with cardiac patients have observed that spouse support is associated with improved adherence (Erling & Oldridge, 1985; Knapp, Gutmann, Squires & Pollock, 1983), but the potential benefit of spouse support for men and women exercising for general health rather than medical reasons was not addressed by this work. Hence, an investigation was initiated in an effort to explore the influence of spouse support in the form of participation on adherence to an organized exercise program in apparently healthy adults (Wallace, Raglin, & Jastremski, 1995). Measures of mood state and self-motivation were assessed in an effort to determine the extent to which any differences observed in adherence may be associated with these variables.

The study was conducted with members of the Indiana University Adult Fitness Program. Potential participants in this investigation were identified on the basis of marital status, and individuals who were unmarried on entry into the exercise program were not included in the study. Sixteen men and 16 women who were married and enrolled in the program with their spouse formed the Married-Pairs group. The Married-Singles group was comprised of 16 men and 14 women who were married, but their spouse was not enrolled in the exercise program. The mean age of the entire sample was 46.0 years ($SD = 11.1$).

At the outset of the study, all participants completed a battery of physiological and psychological assessments. Tests related to physical health included risk factor identification, body composition via underwater weighing, and a treadmill exercise test to establish maximal oxygen consumption. The psychological assessments included the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1992) and the Self-Motivation Inventory (SMI; Dishman, Ickes, & Morgan, 1980).
The POMS is a 65-item Likert-format questionnaire that assesses the specific mood factors of tension, depression, anger, vigor, fatigue, and confusion. The standard ("last week including today") instructional set was employed. The POMS mood factors can be combined (tension + depression + anger + fatigue + confusion)—(vigor) + 100 to yield a total mood score, and this more general assessment was utilized in this investigation. The SMI is a 40-item Likert format questionnaire that assesses the stable trait of intrinsic motivation. Previous research (Dishman et al., 1980; Raglin, Morgan, & Luchsinger, 1990) has found that SMI scores exhibit a moderate and positive association with adherence to physical activity in both exercise and sport settings. Comparisons between the groups of married-pairs and married-singles revealed no differences on any of the physical and physiological measures. The sample scored within the normal range for each of the physical variables.

Exercise Program

Participants could choose from a variety of activities including walking/jogging, stationary cardiovascular equipment, weight training, swimming, and Tai Chi. All activities were supervised by trained exercise leaders. Prescriptions were based on the results of fitness testing, and once target heart rates were established, actual exercise intensity was prescribed from a range of 50% to 80%. Sessions were held three times weekly (Monday, Wednesday, Friday) and began with a 15 to 20 minute warm up followed by a minimum of 20 minutes and maximum of 60 minutes of prescribed exercise activity. Pulse rate was assessed using heart rate monitors or manually by supervisors. In order to determine the extent to which the participants complied with their own prescription, at each session, recordings were made of the mode and duration of the exercise following the warm up and highest exercise heart rate.

Dropout was defined by a failure to attend any sessions throughout a two month period. Monthly attendance was determined by the percentage of supervised sessions attended over each four-week period. Compliance was the percentage of time participants were within their prescribed exercise intensity and duration, and cases in which participants either exceeded or fell short of the assigned prescription (including workouts completed outside the program) were noted. Participants who left the exercise program were mailed an exit survey in which they were asked to indicate why they dropped out from a list of commonly reported reasons (e.g., work conflicts, illness).

Results

The primary finding of this investigation was that at the end of the 12-month period, there was a significant \( p < 0.05 \) difference in dropout between the groups. Of the married-pairs, 6.3% had dropped out compared to a more typical dropout rate of 43% for the married-singles. The magnitude of this difference compares closely to that observed by Heinzelmann and Bagley (1970) who, using attendance patterns, found an 80% adherence rate among married men whose spouse had positive attitudes toward an exercise program versus a 40% adherence rate for men whose spouse had a neutral or negative attitude. Importantly, Heinzelmann and Bagley (1970) studied men who were exercising for medical reasons (i.e., cardiac rehabilitation), whereas the participants in the present investigation were apparently healthy men and women exercising for general fitness. Theories such
as the Health Belief model might posit that adherence would be greater in individuals who have more to gain from exercise, but as noted earlier, research (Franklin, 1988) has revealed that dropout is similar in adults exercising for the purpose of general health or for cardiac rehabilitation. Because the degree of support for the exercise program of the spouses in the married-singles was not assessed, a direct comparison with previous findings was not possible. However, it was found that the lack of spouse support was cited by many of the dropouts as a reason for quitting the program.

The average monthly attendance to scheduled exercise sessions was also higher ($p < 0.05$) for the married-pairs group than the married-singles (54.2% and 40.3%, respectively). None of the married-pairs dropped out of the program until month nine, whereas by the second month of the exercise program, approximately 6% of the married-singles had left the program. At month twelve, 28% of the married-single males and 56% of the married-single females had quit. The difference between the dropout rate of the female and male married-pairs may, in part, be a consequence of the degree of compliance to the exercise regimen. Men in the married-single group were found to have lower levels of compliance to the prescribed duration of exercise than women in the married-single group (13% vs. 62%, respectively). It is possible that the longer duration of exercise in the married-single women may have resulted in an increased dropout rate, as previous research (Pollock, 1988) indicates that adherence is adversely affected as increases in either exercise duration or intensity occur. Significant differences between the married-pairs and married-singles groups were not found for any of the other aspects of exercise prescription.

The mean total mood scores, as measured by the POMS, did not differ significantly between the married-pairs or singles ($M = 109.4, SD = 17.5; M = 116.2, SD = 14.9$, respectively). These values are approximately one standard deviation below the calculated age-group norm, indicating that these participants exhibited desirable mood state profiles. Likewise, the mean self-motivation scores of the two groups also did not differ significantly (married-pairs: $M = 152.5, SD = 14.8$; married-singles: $M = 154.8, SD = 17.8$). These mean scores were found to be either similar (Dishman et al., 1980) or slightly higher (Ward & Morgan, 1984) in comparison to previous self-motivation studies involving adult participants. The self-motivation scores were also contrasted between adherers and dropouts irrespective of pair or single status, and again, no significant differences emerged (adherers: $M = 154.2, SD = 14.4$; dropouts: $M = 148.3, SD = 21.4$). However, this analysis was based on the final exercise status of the participants, and it does not account for differences in the length of time the dropouts attended classes before quitting. This is notable as the mean length of participation of the dropout group was 7.4 months, a considerable period of time given that research indicates that the majority of people quit exercising within the first eight weeks (Dishman, 1988). A correlational analysis of self-motivation scores with months of attendance in the program did yield a significant ($p < 0.05$) relationship between self-motivation and adherence ($r = .32$). The magnitude of this coefficient is comparable to that observed in previous research using the SMI in athletes to a training program ($r = .33$) and exercise frequency in adult college aged students ($r = .23$; Dishman et al., 1980). A discriminant function analysis using self-motivation scores to distinguish adherers from dropouts resulted in correct classification of 88.9% of adherers (24/27), and gain of 14.3% above the chance rate of prediction. In contrast, the achieved prediction rate for dropouts was 20%, a value slightly worse than the 23.8% chance
prediction rate. These findings are consistent with previous research (Dishman et al., 1980; Raglin et al., 1990) indicating that the self-motivation inventory scores can identify successful exercisers a priori at rates better than chance but apparently are not useful in detecting dropouts.

Together, the results for mood state and self-motivation strongly suggest that the different success rates in the married-pairs and the groups of married-singles were independent of mood or self-motivation. However, the finding that the participants possessed above average scores for these variables suggests that more desirable psychological profiles may be associated with the decision to initiate an exercise program.

The exit survey revealed that the most common reasons given for dropping out were family responsibilities and the lack of spouse support (50%). Of the dropouts, 25% indicated that they had learned how to exercise on their own, but no effort was made to confirm whether their activity levels were comparable to the prescription they were given in the program. Travel, work commitments, and illness were each reported by 8% of the dropouts.

Summary

The findings of the previously described study are consistent with previous research, indicating that enhanced social support of a spouse, either by participation or in terms of having a positive attitude to the exercise program (i.e., social norm), can enhance exercise adherence. If replicated, these results indicate that the social support in the form of spouse participation exerts an equally beneficial effect on adherence whether the exercise program is for cardiac rehabilitation or for general fitness. The differences in exercise patterns could not be attributed to the psychological variables assessed in this study as neither mood state nor self-motivation differed between the married-pairs and married-singles. Self-motivation, however, was found to be moderately associated with the length of time participants attended the program, independent of group status (i.e., married-pairs or married-singles). Psychological factors not considered in this study could contribute to the differences in dropout and assessments of social norms for exercise, self-efficacy, perceived barriers, and other potentially relevant factors and should be included in future replications.

It is notable that the married-pairs in this study enrolled together in the exercise program on their own accord; no efforts or inducements were provided to encourage married individuals to join with their spouse. Whether an incentive program targeted toward getting spouses to join an exercise program together would result in an adherence rate comparable to that observed in this study is unclear. Processes that enhance cohesiveness among participants in exercise programs have been hypothesized to result in greater success (Estabrooks, 2000), but studies on the effects of team-building interventions in exercise programs have found their benefit to be only modest and no better than a placebo treatment (Estabrooks & Carron, 1999). Given that research on other intervention techniques has also tended to yield only modest reductions in dropout, it is likely that the benefit of spouse support observed in the present study was a consequence of many variables, including an enhanced sense of purpose or meaning.

A common reference list is being provided following the last article.