

Research article

THE EFFECTIVENESS OF PERSONAL TRAINING ON CHANGING ATTITUDES TOWARDS PHYSICAL ACTIVITY

Steven R. McClaran ✉

School of Health Promotion and Human Development, University of Wisconsin, USA

Received: 04 October 2002 / Accepted: 08 December 2002 / Published (online): 01 March 2003

ABSTRACT

More and more people seeking the expertise of personal trainers in recent years. With very few previous efforts evaluating the effectiveness of the personal training experience in the scientific literature, this study utilized movement in the Stages of the Transtheoretical Model (STM) to determine the efficacy of personal training. One hundred twenty nine volunteer participants (clients) (age range: 20 → 65 years old) were assigned a university senior personal trainer for a 10-week program. At an initial meeting, the clients were given a form to self-assess their stage of motivational readiness for exercise adoption (STM) choosing one of five stages: Pre-contemplation (not intending to make changes), Contemplation (considering a change), Preparation (getting ready to make a change), Action (actively engaged in making a change but only for a short while) & Maintenance (sustaining the change over time). After the initial assessment, the clients and trainer then met once a week and had targeted discussions on problem solving techniques such as determining the Benefits of Physical Activity, Barriers/Obstacles to Exercise, Support System Recruitment, Goal Setting and Relapse Prevention in addition to providing specific suggestions for the client's other exercise days during the week. At the end of the 10-week personal training program, the clients then reassessed their stage of motivational readiness for exercise adoption. Of the 129 clients tested, 27 were in the maintenance (highest) stage and therefore could not move up. None of these 27 clients moved down a stage. Of the remaining 102 clients, there was significant ($p < 0.01$) upward movement at the conclusion of the program. 61 clients (60%) moved up one stage, 13 clients (13%) moved up two stages, 27 clients stayed at the same stage (26%) and one (1%) moved down a stage. The results suggest that one-on-one personal training is an effective method for changing attitudes and thereby increasing the amount of physical activity. Secondly, it seems that using problem-solving techniques is of value for successful behavior change.

KEY WORDS: Behavior change, stage of change.

INTRODUCTION

Many health professionals include exercise programs in their programming because incorporating physical activity into as many aspects of daily living as possible can provide many physiological, psychological and social benefits. The Surgeon General's report on physical activity, the Centers for Disease Control and the American College of Sports Medicine all stress the importance of regular and sustained bouts of moderate-intensity physical activity (Pate et al., 1995) because it is clear that physical activity is very important to preventive disease management, wellness, and employee productivity. Unfortunately, more people in the U.S.

are becoming less active, significantly contributing to a sustained increase in obesity. While there was a gradual increase in the percent of overweight people leading up to the mid 1980's, the unprecedented increase since then has reached epidemic proportions (CDC, 2000).

While it is clear that physical activity programs are an important part of health and weight management, less is known about what specific types of programs can be successful in promoting significant long-term changes in behaviour. With more and more people seeking the expertise of personal trainers in recent years and that many of these are paying more for the one-on-one interaction with their personal trainer compared to other

exercise programs, an evaluation of the usefulness of personal training seems warranted. To date there are only a few studies in the health field that have used the Stages of the Transtheoretical Model (STM) (Prochaska and Velicer, 1997) to evaluate the effectiveness of programs that attempt to increase their participant's physical activity. Marcus and colleagues (1998) compared the efficacy of standardized printed materials to specifically tailored printed materials and Naylor et al. (1999) gave their subjects either stage-matched or unmatched exercise materials and both studies found significant upward stage movement with exposure to literature that encourages increased physical activity. In two studies using incentives, both Hammond et al. (2000) with the Director's Physical Activity Challenge and Marcus et al. (1996) using a worksite health promotion program, showed significant upward stage movement.

An intensive search of the literature however, provided only a few articles that specifically tested whether personal training was successful in effecting behavior change (Maloof et al., 2001; Mazetti et al., 2000; Wing et al., 1996) and none of these used the STM to evaluate behavioral intention to change. Therefore the purpose of this study was to evaluate the effectiveness of personal training on upward movement in STM.

METHODS

Participants

To investigate the efficacy of one-on-one personal training, 129 volunteers were studied (age range: 20 → 65 years old). The participants (clients) were either university students taking a wellness class for credit or employees recruited via e-mail from the University Employee Wellness program. Each client was assigned a senior Health Promotion student personal trainer for the duration of the 10-week program. Permission to conduct the study was approved through the Institutional Review Board for the Protection of Human Subjects and participants provided informed consent.

Stage of Change Evaluation

At the initial meeting with their trainer, each client self-assessed their stage of motivational readiness for exercise adoption (using the form in Table 1) using the STM with 5 stages: Pre-contemplation (not intending to make changes), Contemplation (considering a change), Preparation (getting ready to make a change), Action (actively engaged in making a change but only for a short while) & Maintenance (sustaining the change over time). At the end of the 10-week program, the clients then re-evaluated themselves on a separate form (from the pre-test

form) as to their current post-test STM. The instrumentation used to evaluate the client's STM (Table 1) was established as reliable and was concurrently validated for a significant association with the 7-Day Physical Activity Recall in a previous worksite study by Marcus and Simkin (1993).

Table 1. Stages of change sample questionnaire.

Which best describes you?

1. I currently do not exercise and I do not intend to start exercising in the next 6 months.
2. I currently do not exercise, but am thinking about beginning to exercise in the next 6 months.
3. I currently exercise some, but not regularly*.
4. I currently exercise regularly*, but have only begun doing so within the last 6 months.
5. I currently exercise regularly*, and have done so for longer than 6 months.

*regular exercise = 3 or more times per week for 20 minutes or more each time.

Personal Training Intervention

After the initial meeting, the clients and trainer met and exercised together for an hour, once a week for 9-10 weeks. For the days that they met together, the client and trainer had targeted discussions on problem solving techniques such as determining the Benefits of Physical Activity, Barriers/Obstacles, Support System Recruitment, Goal Setting and Relapse Prevention in addition to providing specific suggestions for the other exercise days during the week.

Statistical Analysis

All comparisons for group mean values to determine movement in STM from the pre-test to the post-test were evaluated using a paired *t-test*. Significance for all tests was set at $p \leq 0.05$.

RESULTS

Of the 129 clients tested, 27 were in the maintenance (highest STM) stage and therefore could not move to a higher stage (Table 2). None of these 27 clients moved down a stage. Of the remaining 102 clients, there was significant ($p < 0.01$) upward movement at the conclusion of the program. 61 clients (60%) moved up one stage, 13 clients (13%) moved up two stages, 27 clients stayed at the same stage (26%) and one (1%) moved down a stage. The group that showed the highest percentage of upward movement (85%), were initially in the second stage (Contemplation). The significant changes ($p < 0.01$) in upward staged movement towards increasing physical activity were consistent across gender and all age groups. In addition, further analysis was

Table 2. Stages of change movement with personal training program.

| Initial stage | Initial number in each stage | Finished in ... | | | | |
|---------------|------------------------------|----------------------|-----------------------|------------------------|-----------------------|-------------------------|
| | | Stage 1 ^a | Stage 2 ^a | Stage 3 ^a | Stage 4 ^a | Stage 5 ^a |
| Stage 1 | 2 | 0 (0%) ^{nc} | 1 (50%) ↑ | 1 (50%) ↑↑ | 0 (0%) | 0 (0%) |
| Stage 2 | 26 | 0 (0%) | 4 (15%) ^{nc} | 11 (42%) ↑ | 11 (42%) ↑↑ | 0 (0%) |
| Stage 3 | 62 | 0 (0%) | 0 (0%) | 15 (24%) ^{nc} | 46 (74%) ↑ | 1 (2%) ↑↑ |
| Stage 4 | 12 | 0 (0%) | 0 (0%) | 1 (8%) ↓ | 8 (67%) ^{nc} | 3 (25%) ↑ |
| Stage 5 | 27 | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 27 (100%) ^{nc} |

Note. Stage 1 = Pre-contemplation; Stage 2 = Contemplation; Stage 3 = Preparation; Stage 4 = Action; Stage 5 = Maintenance. ^a The first number in each row below is the number that finished in that stage and the number in parenthesis is the percent that finished in that stage. ^{nc} = Number and percent with no change in stage movement; ↑ = moved up one stage; ↑↑ = moved up 2 stages; ↓ = moved down one stage.

completed to determine whether there was any difference if the clients were university students taking a wellness class or employees recruited from the University Employee Wellness program and there was significant upward movement ($p < 0.01$) regardless of where the clients came from. There was no difference between the baseline STM between the University students and the Employees.

DISCUSSION

A significant finding of this study was that 57% of the subjects showed upward movement. Furthermore, if those who could not move up a stage (because they were in the highest stage) were factored out, then an even more impressive 73% of the clients showed upward stage movement after the 10-week intervention. As there was no control group in this quasi-experimental study, a comparative discussion of stage movement with other studies using other interventions will be used for determination of the efficacy of personal training. Marcus and colleagues (1998) compared the utility of standardized printed materials to specifically tailored printed materials. In their intervention group, different targeted self-change manuals were distributed to each individual depending on their STM compared to the control group where all the subjects received the same manuals on physical activity. Evaluated after 6-months, both groups showed significant progression into a higher stage of change, however the tailored interventions (37% showed upward movement) was determined to be superior to the control group (27% showed upward movement) in increasing physical activity. In a similar study, patients in a hospital were given either stage-matched or unmatched exercise materials (Naylor et al., 1999) and found no significant difference between the stage-matched or unmatched exercise material groups with 20% of the patients overall advancing at least one stage. A campaign utilizing mass media promotional efforts was the Director's Physical Activity Challenge (Hammond et al., 2000), a 50-day intervention challenge, which

enlisted social support from management and peer leaders combined with incentives. Nearly all of the participants reached their personal prearranged physical activity goal and 36% showed upward stage movement by the end of the 50 days. Another study that utilized incentives as part of the promotion effort, Marcus et al. (1996) combined their worksite health promotion program with risk appraisal and found that 37% showed upward stage movement. Comparing the numbers of upward stage movement, the percent of upward movement (73%) from this one-on-one personal training study at least doubles that achieved in all of the studies previously mentioned. Therefore there is good evidence that the effect of individual personal training is an effective way to change the client's attitudes towards increasing physical activity when compared to other programs.

There are just a few studies that have attempted to measure the effectiveness of personal training. Wing et al. (1996) compared the effects of a small group (3-4 clients) assigned a personal trainer to a control group with only minimal supervision, and determined that those assigned a personal trainer had better adherence (84% vs. 69%) to the exercise sessions during the 24 week period. In the strength training area, two separate studies (Malooof et al., 2001 & Mazetti et al., 2000) compared the influence of a group with a personal trainer to a group that was self-directed and was minimally monitored. In both cases there was significant improvements in strength gains in the personal trainer supervised groups compared to the unsupervised group. There is no mention in the methods sections in either of these personal training studies that there was any formal discussion of behaviour change techniques although it is probable that to various degrees the personal trainers did use some. By contrast, the personal trainers in this study had targeted discussions on the Benefits of Physical Activity, Barriers/Obstacles, Support System Recruitment, Goal Setting and Relapse Prevention during the 10-week program. The solutions to these

discussions would seem to be an important addition to the long-term effectiveness of the personal trainer experience.

A possible problem with evaluating the importance of upward stage movement in STM is to determine whether there is a connection with change in behaviour. In a worksite study by Marcus and Simkin (1993) there was a significant association with the subject's STM and their 7Day Physical Activity Recall. A growing body of research has also investigated whether placement in one of the five STM for exercise reflects differences for participation in healthy behaviours. Herrick et al. (1997) determined that using the STM significantly predicted their subject's exercise levels and dietary fat intake, but not smoking or sun exposure protection. Further, Cardinal (1997) determined that STM for exercise significantly predicted exercise levels plus five other outcome measures: Body Mass Index, VO_{2max} , Relapse, Barriers and Self-Efficacy. Thus it seems plausible that upward movement in STM for exercise is not only accompanied by increasing the amount of exercise, but also with improvement in other health outcomes.

One limitation of this study is that the lack of a control group makes a more definitive statement of the value of personal training on the observed the upward stage movement more tenuous. Future studies using personal training should include a control group, which would allow for a better evaluation of the efficacy of personal training. Of note is that the percentage of those with upward movement in this study is at least double that was observed in four other widely published studies (Hammond et al., 2000; Marcus et al., 1996; Marcus et al., 1998; Naylor et al., 1999). Therefore, these data suggest that one-on-one personal training is an effective method for changing attitudes and thereby increasing the amount of physical activity. Importantly, if we are to have a successful long-term outcome of increasing physical activity while reducing obesity, the most important message is to have an intervention strategy that works not only in the short term, but over a period of years, so many more people maintain their healthy lifestyles for the rest of their lives.

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AUTHOR BIOGRAPHY:



Steven R. McClaran

Employment:

Assistant Professor, University of Wisconsin-Stevens Point.

Degree:

MA, MS, PhD

Research interest:

Programs to Increase Amount of Exercise.

E-mail: smclara@uwsp.edu

✉ **Steven R. McClaran, PhD**

School of Health Promotion and Human Development,
University of Wisconsin-Stevens Point, CPS 240C,
Stevens Point, WI 54481, USA