



The Role of Social Physique Anxiety, Social Support, and Perceived Benefits and Barriers to Exercise in an All-Female Fitness Camp Intervention

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ABSTRACT

International Journal of Exercise Science 10(8): 1094-1104, 2017. Only 20.3% of American adults meet the Center for Disease Control's minimum recommended volume of exercise for anaerobic and aerobic physical activities (11). This small proportion representing those who reach the suggested physical activity levels is an issue of concern for researchers and practitioners in health-related disciplines; further, the Centers for Disease Control report that physical inactivity levels are even higher for women than those of males. In 2008, only 42% of women 18 years and older met the minimal federal levels of aerobic activity through leisure-time aerobic activity (2). This statistic could be considered alarming as American women are not able to reap the physical and psychological benefits of regular exercise activity. Lack of research devoted to determining the reasoning for females' participation and adherence to physical activity. The purpose of the study was to examine the psychosocial changes in the constructs of social cognitive theory in a female-only fitness camp environment across three six-week segments. The study consisted of 62 women, with ages ranging from 23-61 years ($x = 35.66$ years), who were enrolled for at least one six-week session at a southeastern boot camp-style fitness program. A Wilcoxon Signed-ranks test indicated that the Barriers to Exercise scores significantly changed from the pre-testing period ($Mdn = 29$) to the post-testing period ($Mdn = 27.5$), $Z = -2.27$, $p < .05$, $r = -0.30$. The results of the study imply that an all-female fitness camp influence the perception of barriers to engaging in physical activity.

KEY WORDS: Perceived barriers to exercise, women, social cognitive theory

INTRODUCTION

For adults between the ages of 18 and 64, the American College of Sports Medicine (ACSM) recommends engaging in at least 30-60 minutes of moderate-intensity aerobic activity five times a week, or 20-60 minutes of vigorous-intensity aerobic activity three times a week to obtain health benefits (2). The specified amounts of cardiovascular activity should be supplemented with resistance activities on two or more days per week to increase and/or maintain muscular endurance and strength. The activities may include the exertion of all major muscle groups (2). Despite these recommendations, research by Troiano et al., reveals

that only 3.2% of Americans ages 20–59 years meet the minimum recommended volume of exercise (25).

In addition to the physical benefits associated with sustained physical activity, research has also documented the positive psychological effects may also be a result of regular exercise. For example, exercise has been shown to reduce risk of depression and improve mood (12). Furthermore, routine exercise has also been associated with physiologic reactivity to stress and improved sleep (25).

Bandura's social cognitive theory provides a sound framework for the investigation of physical activity behavior (5, 6). The theory states that individuals develop skills and behavioral patterns through modeling others and are subsequently reinforced by their peers (13). Huberty and colleagues assert that women encounter more challenges in engaging in and adhering to physical activity programs compared to men (16). Copious amounts of research have been dedicated to investigating the reasons why women are not as physically active as their male counterparts. For instance, Johnson et al. sampled 226 community women aged 18–72 years to identify their exercise habits, weight control methods, and perceived barriers to beginning and maintaining exercise and weight management programs (19). The most significant factor impeding exercise was a perceived lack of time while the reported barrier to weight management was a lack of willpower and time.

Social cognitive theory attends to the psychosocial dynamics and means for promoting behavior change (8). It provides explanations for patterns of human behaviors that can be used to understand exercise motivation and adherence. Constructs of social cognitive theory have been applied to health promotion behaviors in exercise settings. Some of Bandura's constructs highlighted in the present study include situational perception, outcome expectancies, environment, self-efficacy, self-efficacy in overcoming impediments, goal-setting, and emotional coping (7, 24). The social constructs help to explain the underlying factors of initiation and maintenance of physical activity routines, such as social support, education, enjoyment, and self-efficacy (5, 6, 7). Situational perception, environment, and self-efficacy were chosen for the boot camp intervention. Each of the three constructs could be quantitatively measured to understand participants' experiences in an all-female fitness setting.

An essential element of social cognitive theory is the role of the environment for physical activity (3). One characteristic of fitness boot camps and group exercise programs alike is the element of social support in the physical activity environment. Alcock et al. define social influence as a "real or imagined pressure to change one's behavior, attitudes, or beliefs" (1). The types of social influence include various forms of social support, such as instrumental support (tangible support), emotional support (encouragement), informational support (issuing directions or advice), companionship support (interaction with peers), and validation (measuring oneself up to with others to determine progress and to reaffirm that one's thoughts, feelings, problems, and experiences are ordinary).

An individual's belief that they can successfully complete a task also influences adherence to physical activity. More specifically, Self-efficacy is the degree of confidence an individual has in their ability to complete a specific task or challenge. It is shaped by the individual's level of motivation, thought patterns, and emotional reactions and affects the amount of effort applied to a task and the attained level of performance (8). Given this information, it is imperative to identify how to implement such factors to increase the likelihood of enhancing exercise adherence.

In order to identify a solution for increasing physical activity participation among women and explore the unknown effects that fitness camp exercise programs have on psychosocial variables of its participants, it remains important to investigate how social physique anxiety, perceptions of social support, and perceived barriers and benefits to exercise for women can change over a period of three six-week segments following the completion of a boot camp-style fitness program. Therefore, the purpose of the present study was to examine the psychosocial changes in the constructs of social cognitive theory in a female-only fitness camp environment across three six-week segments. Significant decreases in social physique anxiety and perceived barriers were hypothesized to decrease from pre- to post-testing; it was expected there would be a significant negative difference in participants' change scores. For those who met or did not meet ACSM recommendations for physical activity, it was expected there would be a significant difference in participants' change scores from the Social Physique Anxiety Scale, Exercise Benefits and Barriers Scale, and the Social Support Scale.

METHODS

Participants

Participants in the present study included 62 women, with ages ranging from 23-61 years ($M=35.66$ years), who were enrolled for at least one six-week session at a southeastern boot camp-style fitness program.

Participants who engaged in more than one six-week session were asked to respond to questionnaires regarding their current experience, rather than a summation of multiple boot camp experiences. Participants were grouped for analysis based on whether they reported meeting ACSM recommendations for physical activity in the Godin Leisure Time Questionnaire.

Protocol

The participants registered to take part in a six-week boot camp-style exercise program with an emphasis reducing body fat, strengthen muscles, increase endurance, stamina, strength, and flexibility while working out in a group setting. The 45-minute sessions led by an instructor were offered five times a week and included a combination of cardiovascular and plyometric activities. The sessions provided participants with a structured fitness plan to alter or enhance their current health behaviors.

The boot camp-style fitness program was also designed to help participants develop goal setting and tracking, problem solving, and stress management skills. Participants kept track of their fitness goals and reported progress to the instructor. Campers were asked to participate in the study based upon their registration for a six-week session of camp between the months of September and December of 2012.

The duration of the study allowed for a significant number of participants to drop out of the study. In the initial pre-testing periods of the study, a total of 210 participants completed survey packets. Over time 62 of the participants completed the program and provided pre and post surveys. An online discount opportunity provided an incentive to join the fitness camp, with adherence depending on the participant's level of emotional investment in the activity. Dropout occurred when participants did not complete the 6-week intervention or if they failed to attend workouts during the final three days of the fitness camp session.

Table 1. Summary of characteristics of participants.

		N	%
Race	White, non-Hispanic	53	85.5%
	Black	7	11.3%
	Asian	1	1.6%
	Unknown	1	1.6%
Age	<30	15	24.2%
	30-39	27	43.5%
	40-49	18	29.0%
	50-59	1	.02%
	60-69	1	.02%

Following the completion of the consent form, each of the participants was asked to complete their pre-test assessments including a short demographics survey, which required information including age, race, marital status, number of children, the number of sessions they have previously completed, and the location they most frequently attend for camp sessions. The number of six-week sessions attended prior to the study was statistically held constant so as to control the influence of the segment exposure and to prevent the information from influencing the results. Next, the researcher distributed a packet containing the Godin Questionnaire, Social Physique Anxiety Scale, Exercise Benefits/Barriers Scale (EBBS), Self-Efficacy for Exercise Questionnaire, and Social Support Scale. The surveys were then collected for data analysis.

The boot camp intervention consisted of a six-week period in which participants were engaged in an interval style of training, involving periods of high-intensity work intermixed with periods of low-intensity work. Each workout was designed to maximize energy expenditure while utilizing major muscle groups within the body. Following the completion of each of the six-week segments, the participants were asked to complete their post-test assessments which included the Social Physique Anxiety Scale, Exercise Benefits/Barriers Scale (EBBS), Social Support Scale, and a Godin Leisure-Time Questionnaire.

Social physique anxiety: The Social Physique Anxiety Scale is a twelve-item scale used to measure apprehension related to a woman's figure in a fitness environment (17). It includes a five-point Likert-type scale with anchors of 1 (not at all), 2 (slightly), 3 (moderately), 4 (very), and 5 (extremely). There are two subscales for the Social Physique Anxiety scale, including Feeling of Discomfort (FOD) and Expectation of Negative Evaluation (ENE). The measure contains construct validity, test-retest reliability, internal consistency (Cronbach's $\alpha = 0.90$), and minimal social desirability bias. In the present study, Cronbach's $\alpha = .896$.

Benefits and barriers to exercise: The Exercise Benefits/Barriers Scale (EBBS) was developed by Sechrist, Walker, and Pender to determine the perceptions of individuals regarding the benefits of and barriers to partaking in exercise (24). The 43-item instrument yielded a Cronbach's alpha of .95. Factor analysis produced a nine-factor solution, accounting for 65.2% of the variance. Second order factor analysis produced a two-factor solution, including a benefits factor and a barriers factor. Test-retest reliability was established with a .89 on the total instrument, .89 on the Benefits Scale and .77 on the Barriers Scale (24). For the present study, Cronbach's alpha value was .809 and .703 for the barriers and benefits subscales, respectively.

Social support: The 10-item instrument was originally created for adolescents to report the level of encouragement, participation, and praise from friends and family, as well as the individual's encouragement to engage in physical activity. The participants described support as along a scale between 0 (Never) to 4 (Every day). A reliability analysis revealed Cronbach alpha values of .882 and .799 for family and friend support, respectively (23).

Physical activity behaviors: The Godin Leisure Time Questionnaire (16) was used to assess leisure time exercise behavior and track changes in behavior after the implementation of health and physical fitness programs. The self-report instrument asks participants to reveal the amount of exercise they engage in during a typical week (light, moderate, and strenuous levels). Examples of the various types of activities are given and participants recorded the number of days each week they spend on partaking in a specified levels of exercise for at least 60 minutes. The reliability and concurrent validity were established after researching 306 self-selected healthy adults (16).

Statistical Analysis

The completed surveys from the pre- and post-testing period were entered into SPSS Version 21. The data for the study violated the assumptions associated with a normal distribution due to the unequal cell sizes for the comparison groups and significant skewness or kurtosis values observed; thus, non-parametric tests were used to as a means to compensate for these violations. A Wilcoxon signed-rank test was used to identify any significant differences from pre- to post-testing across all participants for Social Physique Anxiety Scale, Exercise Benefits and Barriers Scale, and the Social Support Scale. Wilcoxon Signed-ranks tests were used to assess the within subjects independent variable of time (e.g., pre and post).

Four Mann-Whitney U tests were conducted as part of preliminary analysis before the other comparison tests were conducted to determine whether there was a difference in change scores between new participants and those who attended at least one six-week fitness camp session.

Four additional Mann-Whitney U tests were used to compare independent samples of participants based on whether they met ACSM recommendations for physical activity to determine whether there was a significant difference in the change scores for the Social Physique Anxiety Scale, Barriers to Exercise, and the Social Support Scale. The change in scores was assessed by subtracting each participant's pre-test scores from the post-test scores for the Social Physique Anxiety Scale, and the Social Support Scale.

Table 2. Wilcoxon signed ranked tests.

	Δ Social Support	Δ Social Physique Anxiety	Δ Benefits and Barriers (Total)	Δ Benefits	Δ Barriers
Z	-.252	-1.276	-2.202	-1.788	-2.268
Asymp. Significance (2-Tailed)	.801	.202	.028**	.074	.023**

**Result is statistically significant, $p < .05$

RESULTS

The results (Table 3) from Mann-Whitney U tests involving the comparisons between participants who were attending their first fitness camp session versus participants who attended more than one fitness camp session suggest there is no difference in their pre- to post-test change scores for social physique anxiety, perception of barriers to exercise, social support of family, or social support of friend. However, there was a significant difference in change scores regarding perception of benefits to exercise. Thus, this variable was not evaluated further given the inability of non-parametric analyses to account for this potential covariate.

Table 3. Mann-Whitney U Tests.

	Individuals with No Previous Fit Camp Experience	Mean Rank	Individuals with at least One Previous Fit Camp Experience	Mean Rank	p-value
Δ Social Support (Family)	25	27.24	29	27.72	.910
Δ Social Support (Friends)	26	29.48	27	24.61	.247
Δ Social Physique Anxiety	29	28.76	33	33.91	.237
Δ Benefits	28	23.11	32	36.97	.002*
Δ Barriers	27	26.56	31	32.06	.214

**Sample size reflects complete data for each variable used in the analysis

Furthermore, change scores for the Social Physique Anxiety Scale and the Social Support Scale were not significantly different in the group that met ACSM recommendations for physical activity versus the group that did not meet ACSM recommendations.

A second Wilcoxon Signed-ranks test indicated that the Barriers to Exercise scores significantly decreased from the pre-testing period ($Mdn = 29$) to the post-testing period ($Mdn = 27.5$), $z = -2.27$, $p < .05$, with a moderate effect size $r = .29$ (See Table 2).

Overall, based on participants' report of physical activity on the Godin Leisure Time Questionnaire, eighty percent ($n = 50$) of total participants met the ACSM's recommendations for frequency and/or intensity of weekly exercise (Table 4). Of the 62 total participants, 12 (20%) campers did not meet the weekly exercise recommendations from the ACSM for intensity or frequency of physical activity. The results of the second Mann-Whitney U analyses between the groups who met or did not meet ACSM physical activity recommendations were not significant ($p \geq .05$) between social physique anxiety, perception of barriers to exercise, social support of family, or social support of friend.

Table 4. Mann-Whitney U Tests.

	**N of Participants Who Met ACSM Recommendations	Mean Rank	**N of Participants who Did Not Meet ACSM Recommendations	Mean Rank	p-value
Δ Social Support	41	26.13	10	25.45	.896
Δ Social Physique Anxiety	48	32.02	12	24.42	.155
Δ Barriers	47	29.32	10	27.50	.752

DISCUSSION

Overall, the results of the study did not reveal any significant changes between the pre-test and the post-test scores on the Social Physique Anxiety Scale or the Social Support Scale. However, there was a negative significant difference barriers in the Barriers to Exercise scores between pre- and post-testing periods (Table 2). Additionally, there were no significant differences between those who met and those who did not meet the exercise recommendations forwarded by the American College of Sports Medicine (2).

For participants who enrolled in at least one previous fitness camp session, there was a significant change in returners' perception of benefits to exercise. With the exception of benefits, it is possible multiple sessions may help with maintenance of social physique anxiety, perception of barriers to exercise, social support of family, or social support of friends. Thus multiple camp sessions may maintain, rather than improve psychosocial factors over time.

In considering the findings of the present study, it appears important to develop additional research investigating the use of discount coupons as means to facilitate exercise adherence. Maehr and Braskamp's personal investment theory addresses how one evaluates whether or not to participate in physical activity by evaluating the demand of time, effort, and monetary investments (21*). The three portions of the investment include Meaning, Antecedents to Meaning, and Personal Investment. The segment of Meaning encompasses motivators such as personal experience, information, social expectations, task design, and sociocultural context. Antecedents to Meaning play more of a secondary role in contemplating exercise activity. These include the performance situations, personal experiences, information, and age/stage in

life, and socio-cultural contexts that contribute to an individual's view of the world. Personal Incentives such as social incentives, ego incentives, health incentives, task incentives, and extrinsic rewards appraise the costs and benefits of their behaviors. Lastly, the evaluation of costs and benefits will lead to a decision to participate in exercise activity. Based upon Personal Investment Theory, participants may have determined aspects of meaning, such as the task design of the fitness program and the social expectation, affected their willingness to adhere to physical activity. Furthermore, antecedents to meaning may have influenced participants' decisions, such as information and personal experience.

The average for the change in Exercise Barriers was -1.36. Due to reverse scoring, the change in scores may be interpreted as a decrease in the number of perceived barriers to exercise and physical activity. The scores of the scale range from 43-172, with higher scores indicating a participant's more positive outlook on the fitness activity. In general, participants were moderately optimistic about the exercise activity, with a mean pre-test score of 74.68 and a mean post-test score of 70.91. Although the scores decreased from before and after the intervention, the difference was not statistically significant. Between the first and final week of the intervention, participants' perception of barriers to exercise decreased from a mean score of 28.55 to a mean score of 27.09.

Once participants have balanced their perceived benefits and barriers to exercise, they may assess other aspects of the fitness program that influence their adherence and enjoyment. For instance, Gallagher et al. (14) determined a behavioral weight loss intervention that introduced strategies for weight loss was effective for improving self-efficacy for physical activity and reducing barriers to physical activity, which in turn influenced participation and weight loss. Additionally, research has documented the relationship between physical activity and psychological health, specifically affecting emotional states and stress (10). Evidence from Burgess' research suggests that a natural environment may play a substantial role in stress reduction and improvement of mood (9). The physical, sociocultural, and technological aspects of the environment may also affect the likelihood of a behavior and associating with a group (22). For example, the biophilia hypothesis suggests that humans are predisposed to being attracted to outdoor settings that are reminiscent of the environment of our early ancestors (26). Thus, aspects of the physical environment, such as the green space and newly designed landscaping may have influenced their experience.

Beyond an individual's perception of a task, forming an identity as part of a group or environment is essential to completing a task (4). McGrath's framework for group dynamics identified the necessary factors to explain group activity (22). The first factor of successful group processing is group member interaction. The women of the fitness camp interact with one another by speaking, laughing, running, and working out together. McGrath explained that individuals who have experience, such as the women who completed numerous sessions, impact the entire group or new group members. With the opportunity to establish social connections with other women, participants are more likely to engage in a group setting (22). Interaction between group members has been supported by social support survey in the quantitative portion of the survey. The measure addressed support from both friends and

family. Scores from pre-tests and post-tests indicate an average of 9.80 and 9.28, respectively. Although support from family members appears to have decreased over time, the difference was not significant, suggesting no change from before and after the fitness camp experience. In regards to friend support, the average score was 8.64 in pre-tests and 9.27 in post-tests. Overall, participants scored an average of 18.61 on pre-tests and 18.49 on post-tests for the Social Support Scale. Question number nine in the Social Support scale, reading, "Do other kids tease you for not being good at physical activity or sports" was omitted from the study due to the age of the population. Given that the ages of the participants ranged from 23-62 years old, they would not likely be in the presence of children while performing physical activity.

In addition to previous experience, McGrath explains that the essence of the task/situation contributes to the nature of the group (22). The central essence of the task/situation to be fulfilled unites the members of the group. In the present study, the task of the group is to reduce body fat, strengthen muscles, and increase endurance, stamina, strength, and flexibility while working out in a group setting. McGrath's work describes how members of a group are connected through a particular task. The task can be reached as members train together to reach individual goals and acquire the health benefits earned when completing the fitness program (22).

The participants' views of themselves in a fitness setting may have affected their willingness to complete a task. Social physique anxiety scores did not significantly differ from before and after the six-week fitness camp interventions with a score range possibility of 12 to 60, participants in the fitness camp intervention scored relatively low. Overall, the average score for pre-tests was 18.61 and post-tests was 18.49.

Despite the contributions the present study adds to the extant literature in this area, there may be alternative explanations for the outcomes of the study. For instance, data collection for the study was not tailored to those individuals who did not complete a full six-week session before attending the post-session fitness evaluation. By collecting survey information from those that did not continue with the fitness camp, the researcher could have more confidently identified factors that did not foster a longer exercise experience.

Additionally, the sample in the study was comprised of 85.5% of participants reporting as White non-Hispanic, 11.3 % reporting as Black, and less than 1% identifying as an other ethnic minority. The results of the study could be generalized to more women in the United States if data were collected from various geographic areas with a more ethnically diverse population.

Despite these limitations, the findings of the current study helped to identify the influence of specific psychosocial factors in an all-female boot camp-style fitness setting. As indicated by Bandura's social cognitive theory, specifically social support and barriers to exercise, a researcher could analyze social support and benefits and barriers to exercise to determine whether the relationship is significant. The various measurements and results of the study can

be used in the future to create a similar program. However, the program may benefit from interventions such as face-to-face goal-setting and psychological skills training.

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