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Women's Self-Efficacy Before and After Hiring a Personal Trainer at the Bowling Green State University Student Recreation Center

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ABSTRACT: Exercise is important to maintaining a healthy weight and decreasing the risk of health-related diseases. Self-efficacy is a psychological concept that, when increased, can help a person to overcome a particular situation. In exercise, a person with high self-efficacy is able to better adhere to a program. It is a goal of The American Council on Exercise (ACE) to educate their personal trainers on ways to increase their clients' self-efficacy. This study was conducted to determine if women who have hired a personal trainer at the Bowling Green State University (BGSU) Student Recreation Center (SRC) in the past five years had an increase in self-reported self-efficacy. An online survey, via BGSU Qualtrics was distributed. The survey consisted of four parts; demographics, quantitative information regarding personal training, and a before and after section containing self-efficacy questions. The research suggested that the self-efficacy of participants increased as a whole, although seven women reported an increase in self-efficacy, seven women reported a decrease in self-efficacy and three reported no change in self-efficacy. The overall increase was observed specifically in mastery experiences, a specific source of self-efficacy.

PURPOSE: The purpose of this study is to analyze the self-efficacy in women before and after hiring a personal trainer at the Bowling Green State University Student Recreation Center.

METHODS: The research was conducted using BGSU Qualtrics to create a survey. This online survey was distributed to all women who have hired a personal trainer at the BGSU SRC in the past five years via Karyn Smith, a Health Educator and Faculty/Staff Wellness Coordinator at the BGSU Department of Recreation and Wellness. The survey consisted of four parts; demographics, quantitative information regarding personal training, and a before and after section regarding self-efficacy questions. The data was transferred from BGSU Qualtrics to an excel spreadsheet. Independent t-tests were run using SPSS v26.0.

RESULTS: Findings of this research suggest that the self-efficacy of women who have hired a personal trainer at the BGSU SRC increased as a whole. This increase was seen specifically in the source of self-efficacy categorized as mastery experiences. Those who participated in this survey found that through their time working with a personal trainer at the BGSU SRC, they had more confidence in their knowledge of exercising and workout routines, as well as their ability to maintain their health goals pertaining to the gym, as set forth by them and their personal trainer.

KEYWORDS: Self-Efficacy, Personal Trainer, Women

Introduction:

This study is focused on women at the BGSU SRC who have hired a personal trainer. As stated in The American Council on Exercise Certified Personal Training Manual, a certified personal trainer should be knowledgeable in four domains. These domains include interviews and assessments, program design and implementation, program modification and progression, as well as, professional conduct, safety, and risk management. All domains ensure a personal trainer can create programs that are individually tailored with an emphasis on behavioral change and long-term adherence. (1)

Exercise is important for good health. It is recommended by the Centers for Disease Control and Prevention (CDC) that each adult perform 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity or an equivalent mix of the two types of aerobic activity each week. (2) Performing aerobic activity for this duration of time has been proven to increase weight loss due to an increase in the body's need for energy. The body can create energy by utilizing the calories consumed and stored. Along with a healthy diet, the body's utilization of calories will put a person's body in a caloric-deficit, which results in weight loss. Physical activity is needed to help one maintain a healthy weight. (2) Still, the benefits of exercise are shown best through weight maintenance, opposed to weight loss due to the small relative amounts of calories burned by exercise as compared to our total daily caloric intake. It has been shown that following the physical activity guidelines in place by the CDC can help a person to maintain their weight without a caloric restriction. (3)

In addition, there are physiological benefits to exercising and maintaining a healthy weight. Exercising helps to reduce high blood pressure, reduce the risk of heart disease, stroke, type 2 diabetes, and some forms of cancer. It also helps to reduce the risk for osteoporosis and falls, as well as, arthritis pain. (2) Specifically pertaining to women, studies have shown that exercise can increase the hormone estrogen within the body while reducing rates of chronic disease. Estrogen is a hormone that functions to maintain bone density by inhibiting osteoclasts. The reduction of osteoclasts reduces the incidence of osteoporosis and other similar diseases. (4)

Furthermore, exercise can benefit one's mental health. Research shows a strong positive correlation between levels of physical activity and academics by reducing stress, anxiety, and other mental health-related conditions that have the potential to negatively affect learning. (5)

In America, over eighty percent of adults and children do not meet the exercise guidelines previously stated. Specifically, adults do not meet the guidelines for aerobic or resistance training. (6) Nearly thirty percent of U.S. citizens over the age of 6 are physically inactive. (7) Less than thirty percent of adults in Ohio were considered physically active in 2017. (8) Overall, women are more physically inactive than men. (8) Reports show that more than sixty percent of women in the U.S. do not meet CDC recommendations for physical activity and more than twenty-five percent do not engage in any physical activity. (7)

In addition to increasing physical activity, ACE wants to ensure that personal trainers emphasize behavioral change and long-term adherence to individualized programs. ACE educates their personal trainers on this topic via the Transtheoretical Model of Behavioral Change. (1) This model is composed of five stages of change: pre-contemplation, contemplation, preparation, action, and maintenance

The pre-contemplation stage can be categorized by the goal to increase thoughts regarding physical activity. The goal of this stage is to begin involvement in physical activity in some capacity. The preparation stage is measured by the goal of participation in regular activity and the action stage is measured by the goal of maintaining said regular activity. Finally, the maintenance stage, has the goal of maintaining activity while preventing inactivity. (1)

It is the goal of all ACE personal trainers to assist their clients to progress to the next stage of change within the Transtheoretical Model. Ultimately, the goal is for clients of such personal trainers to achieve the maintenance stage, when relapse is rare and physical activity is continually maintained. (1)

Self-efficacy is one component of the Social Cognitive Theory of behavior change as described by Albert Bandura in 1986. (9) Self-efficacy was later included in additional health behavior theories, such as the Transtheoretical Model. (10)

Self-efficacy is related to program adherence and maintenance when working with a personal trainer. Those with higher self-efficacy are able to advance to the later stages of the transtheoretical model of behavioral change: action and maintenance. It is the goal of a personal trainer to help their client achieve the maintenance stage. In this stage, there is a prevention of relapse of inactivity and clients maintain continued physical activity. Self-efficacy in physical activity is sourced in six ways: past performance or mastery experiences, vicarious experience, verbal persuasion, physiological state appeals, emotional state and mood appraisals, and imaginal experiences. There are numerous ways in which an ACE personal trainer can improve a client's self-efficacy through the exercise programs they create. A strong example is when a personal trainer creates a program that someone of similar physical ability to their client has experienced success. ACE personal trainers can use this positive experience to teach and offer feedback to their clients. The most influential source of a person's self-efficacy is past performance experience. Past performance experience, also known as mastery experiences, is defined by ACE as the individual's belief regarding their abilities to successfully engage in an exercise program due to past successes in physical activity programs. (1) Therefore, personal trainers can help improve their client's self-efficacy by ensuring that they have positive experiences in their exercise programs. (1)

To our knowledge, no study similar to this one has been conducted at BGSU in regard to the SRC. Therefore, the benefit of conducting this study is an increased understanding of how personal training at the SRC impacts self-efficacy for exercise in women. The results of this study can be utilized to improve or modify programming at the SRC to increase exercise behavior among female members. In addition, the results of this study can be utilized to promote the SRC in their mission to offer expansive recreational facilities for BGSU students, faculty/staff, and community members to practice active and healthy lifestyles. (11) The hypothesis is that the self-efficacy of women increased after hiring a personal trainer at the BGSU SRC.

Methods:

The study was approved in an expedited process by the Institutional Review Board at BGSU. Data were collected from March 10th, 2021 through March 17th, 2021. Participants completed the survey via BGSU Qualtrics. This online survey was distributed via Karyn Smith, a Health Educator and Faculty/Staff Wellness Coordinator at the BGSU Department of Recreation and Wellness to all women who had hired a personal trainer at the BGSU SRC in the past five years. Karyn acted as a confidentiality liaison between the investigator and participant and was blind to all survey data. The survey consisted of four parts; demographics, quantitative information regarding personal training, and a before and after section asking self-efficacy questions. The data was transferred from BGSU Qualtrics to an excel spreadsheet. Independent t-tests were run using IBM SPSS Statistics software, v26.0.

The research was completed to determine if the level of self-efficacy in women increased after hiring and working with a personal trainer at the BGSU SRC. The statements in the survey regarding self-efficacy before and after hiring a personal trainer were identical and in the same sequence, with the same answer options available. The difference was that participants were prompted to answer the statements with the following directions: "Please answer the following questions from your own perspective **BEFORE** you hired your most recent personal trainer from the Bowling Green State University Student Recreation Center" and "Please answer the following questions from your own perspective **AFTER** you hired your most recent personal trainer from the Bowling Green State University Student Recreation Center." The statements regarding self-efficacy were created by the Principal Investigator. The survey categorized the seven ACE Personal Training Manual sources of self-efficacy into five sources of self-efficacy to condense the number of questions asked. Throughout the survey the sources of self-efficacy were grouped as follows:

- past performance as mastery experiences
- vicarious experience
- verbal persuasion
- physiological state appeals, emotional state, and mood appraisals as physiological feedback
- imaginal experiences as visualization

The statements and categorization for these sections are shown in Figure 1. The answers for the self-efficacy questions were composed of five options: very untrue, untrue, neutral, true, and very true. These answers were coded similarly to that of a five-point Likert scale: very untrue equaling 1 and very true equaling 5. Total score for self-efficacy was computed by summing all the items both BEFORE and AFTER personal training. Possible range for self-efficacy was 9- 45. Change in self-efficacy scores were then computed by subtracting AFTER score from BEFORE score.

Figure 1
Categorization of Survey Statements

Sources of Self-Efficacy	Survey Statements:
Vicarious Experiences:	Question 1: I am able to overcome negatively preconceived notions if I can observe a person of similar athletic ability to me correctly perform an exercise. Question 2: I am confident I can do specific workouts with success after watching someone similar to me perform them.
Mastery Experiences:	Question 1:It is easy for me to stick to and maintain my health goals pertaining to the gym. Question 2: I am confident in my knowledge pertaining to my exercises and workout routines.
	Question 1:When my body does not feel at its best, I can still get myself to exercise. Question 2: I am confident that I can complete my workout despite feeling sore or tired.
Verbal Persuasion:	Question 1:When I am given positive feedback, I have a more fulfilling workout. Question 2: I am usually confident in my abilities to exercise after being verbally motivated.
Visualization:	Question 1:I know I can perform a workout when I visualize myself doing so.

Participants were given two weeks to complete the survey. The data were transferred from BGSU Qualtrics to an Excel spreadsheet on a password-locked laptop. Once in Excel, descriptive statistics were run on the women's current age and their ages when hiring a personal trainer at the BGSU SRC. In order to run independent sample t-tests and calculate statistics the participant's answers were coded into the likert scale. Independent samples t-tests (assuming equal variances) were run using SPSS v26.0 to determine if there was a statistically significant difference in the changes of self-efficacy scores reported from pre- to post-personal training experiences.

Results:

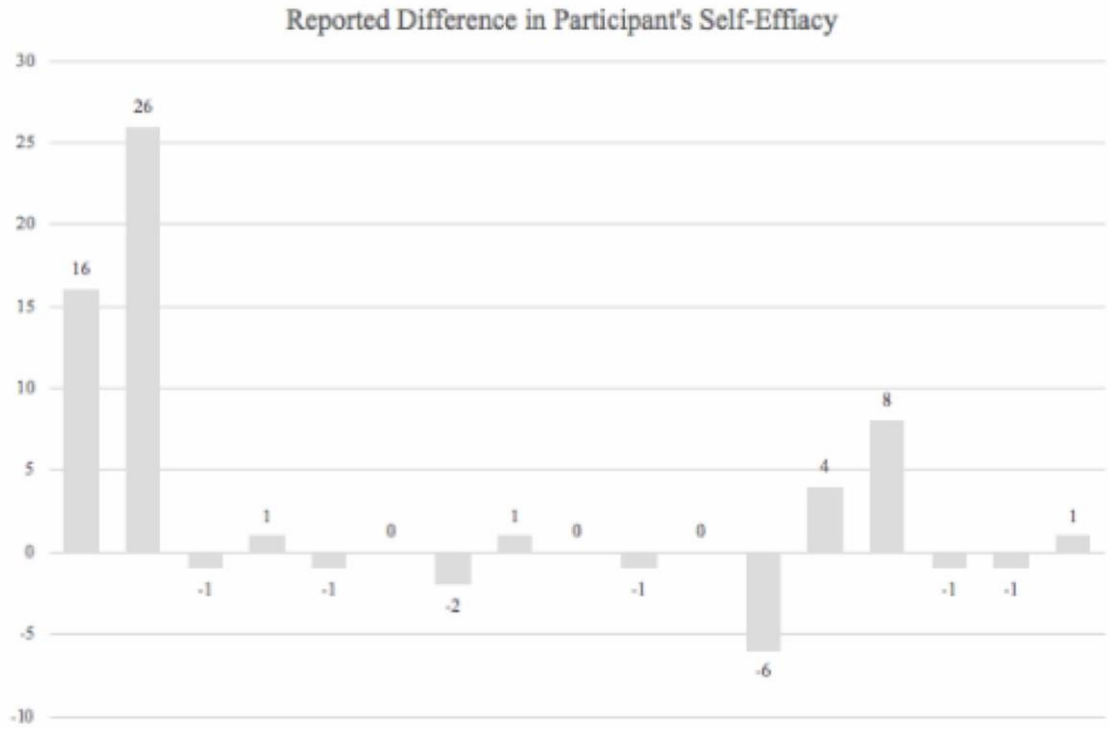
Of the one hundred and forty-four women who were emailed the survey, nineteen women participated in the study for a response rate of 13.2%. The target population was women who have hired a personal trainer at the BGSU SRC in the past five years. All participants identified as women. The participants were primarily Caucasian (84.21%), and fifteen of the nineteen participants had hired just one personal trainer, with the others hiring two or three personal trainers. There were two deviations in participant's answers. One participant responded to the question regarding the minutes they worked with their personal trainer as "30-45 minutes." This was coded as 30 minutes since this was the minimum. Another participant responded to the question regarding the number of months they worked with their personal trainer as "0.1." This was coded as 1 month. The demographics of all participants can be found in Table 1. Two participants had incomplete surveys. A survey glitch caused these participants to be unable to answer questions regarding their self-efficacy after hiring a personal trainer. Their data regarding demographics are included in

Table 1. Of the seventeen participants who had a completed survey, seven women reported an increase in self-efficacy after working with a personal trainer (mean increase of 8.14)
while seven other women reported a decrease in self-efficacy after training (mean decrease of -1.85). The results are shown in Figure 2. Three women were excluded from the analysis because they reported no change in self-efficacy after personal training. Table 2 shows that the changes in self-efficacy were statistically significant between the two groups ($t(12) = 2.71$, $p = 0.011$). Overall, there was an increase in the self-efficacy of participants. The largest increases in self-efficacy were found in the questions categorized as mastery experiences as the source of self-efficacy. This can be shown by the change score shown in Table 3. Therefore, the null hypothesis is rejected.

Table 1
Demographic Characteristics of Participants

Variable		N=19(%)	Mean (Std. Dev.)	Min.-Max.
Race				
	Caucasian	16 (84.21)		
	African American	1 (5.26)		
	Asian	1 (5.26)		
	Two or more	1 (5.26)		
Ethnicity				
	Non-Hispanic	18 (94.73)		
	Hispanic	1 (5.26)		
Education				
	High School	1 (5.26)		
	Bachelor's Degree	4 (21.05)		
	Master's Degree	8 (42.11)		
	Ph.D. or higher	6 (31.58)		
Age			49 (14.5)	29-73
Age (When Personal Training Began)			46 (14.2)	24-68
Number of Personal Trainers (hired in the past 5 years)				
	1	15 (78.94)		
	2	2 (10.53)		
	3	2 (10.53)		
Months Training				
	1-6	12 (63.58)		
	7-12	4 (21.05)		
	12+	3 (15.79)		
Minutes Training (Per Week)				
	30	5 (26.32)		
	45	4 (21.05)		
	60	10 (52.63)		

Figure 2



Notes: Each bar represents one participant's reported difference in self-efficacy.

Table 2

Results of the t-test Comparing Self-Efficacy Change Scores

	n	df	t	p
Increased Self-Efficacy	7	12	2.71	.011
Decreased Self-Efficacy	7			

Notes: Values (n=14) do not add to 100% (n=19) due to the survey glitch missing data from two participants and from participants reporting no change in self-efficacy.

Table 3
Change Scores of Average Participant's Self-Efficacy

Self-efficacy Category	Mastery Experiences		Physiological Feedback		Vicarious Experiences		Verbal Persuasion		Visualization
Self-efficacy Measure	Question 1	Question 2	Question 1	Question 2	Question 1	Question 2	Question 1	Question 2	Question 1
Total Scores: Before	62	64	67	67	69	73	75	71	67
Total Scores: After	72	73	72	73	76	75	81	74	73
Change Scores	9	9	5	6	7	2	6	3	6

Between those participants who reported an increase and decrease in self-efficacy after hiring and working with a personal trainer, numerous t-tests were run: 1) A t-test was run to compare the age of participants when they hired a personal trainer where the categories of participants were determined by the mean age; those under 46 years old and 46 years old and over; 2) A t-test was run regarding the number of days of training per week and categorized as one day per week or two to three days per week; and 3) A final t-test compared the number of months trained, which was categorized as less than a year or one year or greater. No statistical evidence was discovered through these t-tests. No other trends were noticed in overall self-efficacy, including the level of education and number of personal trainers hired.

Discussion:

Findings of this research suggest that the self-efficacy of women who have hired a personal trainer at the BGSU SRC increased as a whole. This increase was seen specifically in the source of self-efficacy categorized as mastery experiences. Those who participated in this survey found that through their time working with a personal trainer at the BGSU SRC, they had more confidence in their knowledge of exercise technique, benefits, and programming, as well as their ability to maintain their health goals pertaining to the gym, set forth by them and their personal trainer. The ACE Personal Training Manual emphasizes that mastery experiences are the most significant predictor of self-efficacy. Therefore, the results of this study align with the past research done by ACE.

This study indicated that there was no statistical significance between those women who saw a decrease in self-efficacy and other demographics measured within this research study. This could be due to the small sample size and lack of information within the survey regarding the stage of the transtheoretical model of behavioral change that the women currently find themselves. Past research done by ACE tells of the relationship between self-efficacy for activity and stages of a person in the transtheoretical model of behavioral change.

The results of this research are subject to limitations. First, a subjective survey cannot determine causality, a longitudinal study would need to be performed. The target population was limited to a small convenience sample of nineteen women. Of those nineteen participants, sixteen of them are Caucasian and eighteen are non-Hispanic. Therefore, there is a lack of diversity in the race and ethnicity of those who participated in the study, decreasing the generalizability of our findings.

There were two survey errors which may have allowed for some statistical discrepancy. First, there was a glitch in the survey, which caused two participants to be unable to respond to the statements regarding their self-efficacy after seeing a personal trainer. Second, the survey had one error, question 30 gave no option to the participants to choose "very untrue."

In addition, the survey was limited; it was a one-time survey. Participants may have encountered recall bias because of this. To conclude the long-term effects personal training may have on a woman's self-efficacy, longitudinal research must take place.

Finally, there is a possibility that those who chose to participate worked with satisfactory trainers, and those who had a poor experience with their personal trainers at the BGSU SRC declined to participate.

To the best of our knowledge, there has been no study similar to this one conducted at BGSU regarding Personal Training at the SRC. Due to the results of this research, it would be recommended that the BGSU SRC spend a sufficient amount of time and resources when training their personal trainers on the mastery experience source of self-efficacy. Past research has shown that mastery experience is the most effective way to foster self-efficacy within a person. (9) With a heightened emphasis on mastery experience, there is a higher chance that these women will be able to advance in the Transtheoretical Model of behavioral change. This advancement therefore, will increase the overall physical activity of those who hire and work with personal trainers at the BGSU SRC which will lead to successful weight management and improved disease risk profile.

References

(1) Green, D. J., & Bryant, C. X. (2014). *ACE-certified personal trainer manual* (Fifth). San Diego, Ca: American Council on Exercise.

(2) Hong, I., Coker-Bolt, P., Anderson, K. R., Lee, D., & Velozo, C. A. (2016). Relationship between physical activity and overweight and obesity in children: Findings from the 2012 National Health and Nutrition Examination Survey National Youth Fitness Survey. *American Journal of Occupational Therapy*, *70*(5), 7005180060p1-7005180060p8.

(3)Swift, D. L., McGee, J. E., Earnest, C. P., Carlisle, E., Nygard, M., & Johannsen, N. M. (2018). The effects of exercise and physical activity on weight loss and maintenance. *Progress in cardiovascular diseases*, *61*(2), 206-213.

(4) Saladin, K. S. (2015). Anatomy and physiology: the unity of form and function. New York: McGraw-Hill.

(5) Barile, N. (2018). Exercise and the Brain: How Fitness Impacts Learning.

https://www.wgu.edu/heyteach/article/exercise-and-brain-how-fitness-impacts-learning1801.html.

(6) Office of Disease Prevention and Health Promotion. (2000). US Department of Health and Human Services: Healthy People 2010. *http://www/health/gov/healthypeople/*.

(7) Manley, A. F. (1996). Physical activity and health: A report of the Surgeon General.

(8) Centers for Disease Control and Prevention. (2020). Adult physical inactivity prevalence maps by race/ethnicity.

(9) Bandura, A. (1991). Social cognitive theory of moral thought and action. *Handbook of moral behavior and development*, *1*, 45-103.

(10) Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American journal of health promotion*, *12*(1), 38-48.

(11) Student Recreation Center. (n.d.). Retrieved from https://www.bgsu.edu/recwell/student-recreation-center.html.