Original Research

Body Image as a Motivator and Barrier to Exercise Participation

LAURA BRUDZYNSKI*[1], and WILLIAM P. EBBEN ‡[2]

[1]Department of Psychology, Marquette University, Milwaukee, WI, USA;
[2]Department of Physical Therapy, Program in Exercise Science, Marquette University, Milwaukee, WI, USA

*Denotes undergraduate student author, ‡denotes professional author

ABSTRACT

Int J Exerc Sci 3(1): 14-24, 2010. This study examined self-reported relationships between motivations and barriers to exercise, frequency of exercise, and location of exercise to body image. The study surveyed 1044 students from a large Midwestern university. Respondents comprised of 689 (66.0%) females and 355 (34.0%) males with an age range of 17-55 years. Raw survey data were analyzed using independent content analysis. Most participants (76.8%) reported exercising while the remainder did not. Body image was a significant factor in determining the amount exercised for a majority of participants (58.3%), as well as the location of exercise for some (22.4%). Non-exercisers were satisfied with their overall appearance and did not identify body image as a significant barrier to exercise. However, non-exercisers, as well as exercisers, reported a desire to exercise more. Both exercisers (77.4%) and non- exercisers (90.9%) exercised more in the past and wished they exercised more currently (76.0% of exercisers and 88.8% of non-exercisers, respectively). These data show that body image was a motive to exercise amounts for exercisers, a barrier to exercise location for exercisers, but not a barrier to exercise for non-exercisers.

KEY WORDS: Exercise psychology, university students, exercise compliance, exercise behaviors

INTRODUCTION

Body image has been defined as the subjective concept of physical appearance and can be either positive or negative (4). The perception of physical appearance as being positive or negative predicts exercise motivation and behavior (1, 10, 16). Specific exercise motives include improving or maintaining a desired physical appearance (13). The relationship of body image and exercise participation is manifested in the fact that related issues such as weight management, appearance, and body dissatisfaction have all ranked consistently high as motivators to exercise participation (11, 14, 19). Specifically, research has shown that those who perceive themselves as overweight are more likely to exercise to lose weight than those who do not perceive themselves to be overweight (10). These findings show that body image has the potential to influence exercise participation rates in a positive way, in that perceived body image increases exercise participation.

While body image may act as a motivator to exercise in some, it has also been reported as a barrier to exercise in others (3, 12, 13, 18, 20). Negative body image may include social physique anxiety, which is the experience of anxiety in the presence of real or imagined negative physical evaluation (12). Individuals with high levels of social physique anxiety including those who perceive themselves as overweight, are less likely to place themselves in situations where their bodies may be evaluated negatively (8, 12). Thus, those who have a more negative body image, and experience higher anxiety, are less likely to engage in exercise.

Research has shown that a negative body image, in addition to serving as both a motivation and barrier to exercise participation may also affect the preferred location of exercise. Appearance factors such as being underweight or under-toned may prompt exercisers to avoid revealing clothing, crowded gyms, sports teams, and certain types of exercise they will perform in public; usually limiting themselves to exercises that is believed to be within their perceived comfort and ability level (12). Therefore, it is not surprising that individuals with higher social physique anxiety prefer exercising in private locations over public ones (20). Specifically, public environments that include multiple mirrors and the presence of other exercisers have been shown to produce significantly higher levels of state anxiety than private environments where no one is watching and where individuals cannot see themselves in full length mirrors (3).

The current study aims to examine this relationship between body image and exercise participation in a large university population. Past research suggests that participants will identify body image as a significant motivator to their exercise rates, and a negative body image as a barrier. By surveying non-exercisers, the current study also aims to determine the influence of body image on their exercise behaviors. Where previous studies utilized more closes ended questions, the current study uses open ended questions in an attempt to achieve distinctive and unique raw data answers from each participant. A large sample size was used in order for qualitative research to be as comprehensive as possible.

It is hypothesized that body image affects amount of exercise, specifically that individual concerns over a negative body image would increase amounts of exercise. Additionally, it is hypothesized that body image would affect the location of exercise, specifically that negative attitudes would influence the choice of private locations. Finally, it is hypothesized that non-exercisers would identify a negative body image as a barrier to exercise participation. The purpose of this study was to assess the role of body image as a barrier to exercise and its affect on exercise frequency and location.

METHOD

Survey

The "*Body Image and Exercise Participation Survey*" used in this study was created and validated for this application based on the input from an advisory group of twenty allied health professionals. These professionals worked in a variety of disciplines including nursing, fitness, strength and conditioning, wellness, health

promotion, counseling psychology, clinical social work, physical therapy, exercise physiology and exercise psychology. The questionnaire was created by researchers because a suitable survey of body image and exercise motives and barriers did not exist in the literature. The questionnaire was validated through pilot testing with a sample of allied health professionals, then modified based on the feedback of these respondents. The questionnaire was then further validated via a pilot test with a group of 30 university students, and modified again based on the results of their feedback. This study, and survey instrument were approved by the Institutional Review Board of the university from which participants were recruited.

The questionnaire was divided into several sections including background information and exercise participation rates, motives and barriers to exercise, and a section that examined the role of body image as a motive and barrier to exercise participation. For the purpose of the study, exercise was defined as going out of one's way to participate in physical activity not part of a daily routine, such as walking to classes or work or taking the stairs. The questionnaire included open-ended questions about the location and amount of exercise, past exercise habits, and how body image influences each of these variables. Additionally, closed ended questions using Likert-scales assessed the relationship of participant's perceived appearance to past and present exercise participation rates.

Data Collection

The questionnaire was sent to 4001 randomly selected participants from a large Midwestern university in an email, which contained an introductory description of the project, along with the questionnaire as a web-based link. A large number of participants were recruiting for the study to increase the external validity of the results. A statement of informed consent preceded participation in the study, and students were given one week to complete the questionnaire, with a follow up reminder email sent halfway through the week. Researchers received a final computer generated version of all completed questionnaires for data analysis.

Statistical Analyses

Answers to open ended questions were content analyzed according to the methods described by Patton (15). During analysis, two researchers examined the raw data separately and generated higher order themes via independent, inductive content analysis. Researchers independently examined the raw data, and developed higher order themes based on the common patterns presented. Higher order themes were based on specific answers self-identified by participants. Researchers then compared and integrated their themes until a consensus was reached, consistent with the methods described by Patton (15). At the point of development of higher order themes based on researchers separate inductive analysis, deductive analysis was used to confirm that all raw data themes were represented. Researchers were trained and experienced in the qualitative methods of exercise science and exercise psychology research and content analysis.

RESULTS

Background Information

Of the sample of 4001 university students invited to participate, 1044 responded to the survey (26.1%). Respondents ranged in

age from 17-55 years, with an average age of 20.5 ± 5.8 years. A variety of ethnicities were represented, with the majority self-identified as "White, non-Hispanic," (88.5% of respondents), and the remaining 11.5% made up of "Hispanic," "Asian," "Black," and "Native American or Alaskan Native." Respondents included 689 (66.0%) women and 355 (34.0%) men. A majority of the sample (97.9%) was from the United States with 32 different states of origin identified, as well as participants from 17 countries.

Exercise Participation Rates

The second section of the questionnaire assessed how often the survey respondents exercised. Approximately 76.8% of survey participants reported exercising; where as 23.2% did not. Of those who reported exercising, 77.4% identified that they had exercised more in the past. Similarly, of those who reported not exercising, 90.9% stated that they had exercised more in the past. Seventy-six percent of exercisers and 88.8% of non-exercisers wished that they exercised more or exercised, respectively. For those who exercised, participants reported an average of 220.4 minutes of exercise time per week.

Perceived Body Image and Amount of Exercise

Exercisers were then asked whether or not their perceived body image affects the amount that they exercise. Fifty-eight percent of respondents reported that the amount they exercised was influenced by their perceived body image, and the stated reasons for this are shown in table 1. General themes found within the results revealed increased exercise participation when feeling overweight or unattractive, a desire to achieve or maintain a specific level of fitness, and a desire to feel better about one's overall body image.

Those who reported exercising were also asked whether or not their body's appearance altered the location where they preferred to exercise. One hundred eighty out of 1044 participants (22.4%) reported that their appearance influences their preferred location of exercise; the reasons presented in table 2. The general themes concerning body image and exercise location revealed a preference for being alone or with a small group of people. The general reason for private, or semi-private, locations for exercise was a fear of embarrassing oneself in front of others; with many identifying a fear of underperformance.

Exercise and Appearance for Non-Exercise

In a series of questions about body image and exercise rates, non-exercisers were asked to rate, on a 7 point Likert scale, ranging from "strongly disagree" to "strongly agree," whether they agreed with several statements. For the statement "*I do not exercise because I believe that people will judge me by my appearance*," the average Likert-scale score was 2.64, indicating that most participants did not agree with this statement. For the statement "*I do not exercise because I am uncomfortable with my body's appearance*," the average Likert-scale score was 2.34, indicating again that most participants did not agree with this statement. Participants were then asked to rate the way they felt about their body's appearance, with an answer of one (1) identifying "*Not Very Satisfied*" up to seven (7) identifying "*Very Satisfied*." The average score reported from this non-exercising group was 4.24, indicating that most participants were satisfied with their body's appearance.

Table 1. Perceived Body Image and Amount of Exercise

Higher Order Themes	Number / Percent	Raw Data Example
1. Exercise More When Feel Fat	94 / 28.4%	"over 10% body fat or look fat I exercise more"
2. Body Image Causes More Exercise	54 / 16%	"if look fatter than friends, want to exercise more"
3. Exercise to Improve Appearance	50 / 15.1%	"exercise more to feel better about way I look"
4. Exercise to Improve Body Image	26 / 7.9%	"exercise more because I hate my current body"
5. To Change Specific Body Area	21 / 6.3%	"work on abs because they need most improvement"
6. Compensation (Food/Exercise)	16 / 4.8%	"exercise more so I can eat more"
7. Increased Overall Self Esteem	13 / 3.9%	"feel better about self when I exercise more"
8. Out of Shape	13 / 3.9%	"exercise less when out of shape, feel discouraged"
9. Maintenance	11 / 3.3%	"exercise to maintain current weight and BI"
10. To Lose Weight	8 / 2.4%	"exercise more to lose weight"
11. To be in Shape	7 / 2.1%	"I exercise more to be in even better shape"
12. Scrutiny of Others	5 / 1.5%	"avoid some exercises if they will draw attention"
13. Prevent Weight Gain	5 / 1.5%	"exercise to not feel fat in future"
14. Increase Muscle/Strength	4 / 1.2%	"started exercising more to get bigger and stronger"
15. Being Thin in Motivator	4 / 1.2%	"when I look skinny I want to exercise more"

Higher Order Themes = Theme generated by researchers from the content analysis based on subject raw data. Number/percent = The number and percent of raw data answers from which the higher order theme were generated. Raw Data Example = An example of raw data provided by subject, made up higher order theme.

Table 2. Perceived Body Image and Location of Exercise

Higher Order Themes	Number / Percent	Raw Data Example
1. Prefer Exercise in Private	28 / 12.9%	"prefer exercising in privacy of own home"
2. Embarrassed / Self Conscious	24 / 11.0%	"don't like the gym, I'm too embarrassed"
3. Prefer Less People	21 / 9.7%	"prefer when there are not lots of people"
4. Fear of Others Judgment	21 / 9.7%	"prefer outdoors where no one looking/judging"
5. Uncomfortable Anywhere	21 / 9.7%	"uncomfortable exercising anywhere anytime"
6. Prefer Exercising Alone	14 / 6.9%	"prefer to be by myself completely"
7. Avoid Exercising Outdoors	15 / 6.9%	"do not like unwanted attention I get outside"
8. Low Body Image	14 / 6.5%	"if low BI one day, run outside instead of gym"
9. Prefer Exercising Outdoors	12 / 5.5%	"like outdoors, I don't think about anyone, vice versa"
10. Out of Shape	11 / 5.1%	"if out of shape and dumpy, go away from campus"
11. Avoid Gym Because of Opposite Sex	9 / 4.1%	"no gyms because too many guys there"
12. Prefer People of Same Ability	8 / 3.7%	"prefer to be with others of same, or lower, ability"
13. Dislike Attention at Gym	7 / 3.2%	"avoid gyms because I think people gawk at me"
14. Compare Self to Others	6 / 2.8%	"insecure about ability and compare to those better"
15. Prefer Crowded Places	5 / 2.3%	"prefer crowded places because I feel that I blend in"

Higher Order Themes = Theme generated by researchers from the content analysis based on subject raw data. Number/percent = The number and percent of raw data answers from which the higher order theme were generated. Raw Data Example = An example of raw data provided by subject, made up higher order theme.

Table 3. Perceived Body Image in Relation to Past Exercise Behaviors for Non-Exercisers

Higher Order Themes	Number / Percent	Raw Data Example
1. Appearance	24 / 18.9%	"felt ugly, wanted to look better"
2. Change Specific Body Area	21 / 16.5%	"wanted legs more muscular/toned"
3. Lose Weight	16 / 12.6%	"thought I needed to be thinner"
4. Increase Overall Self Esteem	13 / 10.2%	"exercising made me feel better about self"
5. Improve Body Image	10 / 7.9%	"exercised to feel better about my body"
6. Training for Sport	9 / 7.1%	"to look better in HS sports"
7. Health Reasons	6 / 4.7%	"used to have cancer, now cant exercise"
8. Build Muscle and Tone	6 / 4.7%	"wanted to look bulkier and more toned"
9. No Visible Results	5 / 3.9%	"tried exercising one summer, no results"
10. Used to be in Better Shape	5 / 3.9%	"used to be fit and liked exercising"
11. Others Judgment	4 / 3.1%	"did not feel like judged when skinnier"
12. More Motivation	3 / 2.4%	"more time and motivation in past"
13. Attract Opposite Sex	3 / 2.4%	"wanted to lose weight to attract more guys"
14. Maintain / Gain Body Weight	2 / 1.6%	"exercised to maintain weight and look"
15. Compare Self to Others	2 / 1.6%	"compare self to skinner cheerleaders"

Higher Order Themes = Theme generated by researchers from the content analysis based on subject raw data. Number/percent = The number and percent of raw data answers from which the higher order theme were generated. Raw Data Example = An example of raw data provided by subject, made up higher order theme.

Table 4. Perceived Body Image in Relation to Past Exercise Behaviors for Exercisers

Higher Order Themes	Number / Percent	Raw Data Example
1. To Lose Weight	65 / 25.4%	"too fat and wanted to be slimmer"
2. To Improve Body Image	39 / 15.2%	"wanted to feel better about way I look"
3. Training for Sport	34 / 13.3%	"had to fit in with buff guys on team"
4. Improve Overall Appearance	28 / 10/9%	"thin to fit in with high school girls"
5. To Get in Better Shape	16 / 6.3%	"wanted to run longer"
6. Gain Weight / Muscle	14 / 5.5%	"bigger and stronger for ladies"
7. Disordered Eating in Past	10 / 3.9%	"issues with eating and exercising"
8. External Motivation	10 / 3.9%	"coaches pushing me in HS, now no one"
9. Stay in Shape	10 / 3.9%	"wanted to be in best shape"
10. Had a Better Body Image in Past	7 / 2.7%	"had better BI in past and exercised more"
11. Judged Negatively	7 / 2.7%	"overweight and did not want judgment"
12. Specific Body Area	6 / 2.3%	"wanted more toned arms and abs"
13. Body Image Improved with Age	5 / 2.0%	"negative BI improved as I got older"
14. Compensation (Exercise / Food)	3 / 1.2%	"if I ate too much then exercise more"
15. Clothes did not Fit	2 / 0.7%	"if clothes got tight, exercise more"

Higher Order Themes = Theme generated by researchers from the content analysis based on subject raw data. Number/percent = The number and percent of raw data answers from which the higher order theme were generated. Raw Data Example = An example of raw data provided by subject, made up higher order theme.

Body Image in Relation to Past Exercise Participation for Non-Exercisers

Almost all non-exercisers (90.9%) reported that there was a time in the past when they exercised more. Furthermore, 30.9% acknowledged that their perceived body image influenced reasons for exercise in the past. The self-identified reasons that body image influenced past exercise rates are presented in table 3. General themes included appearance and body image concerns, similar to self-identified motives to current exercise participation rates.

Body Image in Relation to Past Exercise Participation for Exercisers

Exercisers were also asked whether or not they exercised more in the past. Of those, 74.4% reported exercising more in the past. Additionally, 37.8% stated that their perceived body image influenced their reasons for exercising in the past. The reasons that body image influenced exercise in the past are presented in table 4. Similar to non-exercisers, general themes for increased exercise behaviors included weight loss, appearance, and body image concerns.

DISCUSSION

The current study is the most comprehensive qualitative study on the topic of body image and exercise behaviors. The use of open ended questions in this study allowed for self-identified as well as idiosyncratic raw data, compared to previous studies that use closed ended and forced answers. Results of the current study are consistent with findings of past research, which links body image to increased exercise amounts (13). In the current study, 58% of exercisers reported that body image affected the amount they exercise. The higher order theme, *Appearance*, was identified as the most common contributor to individual exercise behaviors, consistent with past research (22). Body image was also identified as a barrier to exercise location, with most exercisers reporting a preference for private locations. Non-exercisers, however, did not identify a connection between body image as a barrier to exercise participation.

Negative Body Image as a Motivation to Exercise Participation

The present study identifies negative body image as a primary motive to exercise participation. The design of open ended questions allowed for participants to give individually specific answers to the question of how body image influences exercise habits. The specific negative terms used in the raw data resulted in 28% of exercisers identifying increased exercise rates when feeling overweight (*Exercise More When Feel Fat,* ranked first). Similarly, participants identified other negative body image related motivators to increased exercise amounts, such as *Exercise to Improve Appearance,* and *To Change a Specific Body Area,* ranked third and fifth respectively. These results are consistent with past research, which similarly specifies body image dissatisfaction leading to more exercise (22).

Body Image as a Barrier to Exercise Locatio

In the current study, 25% of exercisers reported that body image affected their location of exercise, frequently identifying a preference for private or semi-private locations. This finding was evidenced in the higher order themes such as *Prefer to Exercise in Private*, ranked first, *Prefer Less People,* ranked third, and *Prefer Exercising Alone,* which ranked sixth. This finding is

supported by research, which similarly identifies body image related issues as dictators of a preferred location of exercise (20). However, while past research identified negative body image as a barrier to exercise location (13, 3), the use of open ended questions allowed for specifically negative themes to emerge. Participants were able to give idiosyncratic answers such as *Embarrassment/ Self Conscious,* ranked second, *Fear of Others Judgment,* ranked fourth, and *Low Body Image*, ranked eighth, as ways in which body image affected exercise location.

Contradiction between Exercise as a Motive and a Barrier

Exercise participation would seemingly decrease based on the contradiction of body image as a motive to increased exercise behaviors, yet also as a barrier to exercise location. A situation may arise where a person with body image anxiety is motivated to exercise more, yet refrains from public facilities for fear of social evaluation, therefore limited in the amount of exercise they otherwise would have desired to perform. On the other hand, individuals with lower social physique anxiety have been shown to have no significant preference for private or public locations of exercise (20). This absence of preferences for exercise location was also supported by the findings of the current study since many exercisers (75%) did not identify body image as a barrier to exercise location. For those exercisers who do experience anxiety about location of exercise, further research may be conducted to establish ways in which that anxiety may be decreased. For example, it may be helpful for public facilities to have fewer mirrors, Or to divide a large exercise room into smaller rooms or compartments so as to decrease the number of people one is potentially exercising with, or provide group exercise classes that are divided by experience level, so that novice exercisers are not performing next to more experienced exercisers?

Non-exercisers comfortable with appearance, not a barrier to exercise

Many studies have connected a negative body image to reasons for exercising, demonstrating that individuals exercise in an attempt to become for comfortable with their appearance (11, 14, 18). In the current study, non-exercisers did not connect body image to their reasons for not exercising. When asked how strongly they agree with the statement "*I do not exercise because I am uncomfortable with my body's appearance*," the average Likert-scale score was 2.34 on a scale of 7, showing that participants did not agree with the statement, and did not identify negative body image as a barrier to exercise participation. Similarly, when asked to rate how satisfied they were with their appearance, the average Likert-scale score was 4.24, indicating that non-exercisers were satisfied with their appearance. Therefore, the current study shows that university non-exercisers do not refrain from exercise for body image related reasons. However, 88.8% of the sampled non-exercisers reported a desire to exercise more, although a connection to body image as the barrier to exercise participation was not established.

Past Exercise Rates

Although the majority of non-exercisers reported an overall satisfaction for their appearance, many reported exercising more in the past. Body image was connected to exercise behaviors in the past for 30% of non-exercisers, and of those who identified

this connection, a general theme in the raw data revealed that a *negative* body image was the motive for exercise participation (*Appearance,* and *Improve Body Image*, ranked first and fifth, respectively). Yet current non-exercisers were satisfied with their appearance, and did not identify body image, and specifically not a negative body image, as a barrier to exercise participation.

The findings of the current study are consistent with past research, which identifies body image as a motivation to increased exercise amounts. More specifically, this study shows that a negative body image increases exercise participation. For exercisers, it was negative body image themes which emerged most often in connection with increased exercise participation (*Exercise More When Feel Fat*, *Exercise to Improve Appearance*, *Exercise to Improve Body Image, Scrutiny of Others*). Because of the large sample size and open ended questions in this study, such detailed and unique answers emerged.

However, the current study did not find that a negative body image was a barrier to exercise participation in university students, evidenced by the high Likert scale scores for non exercisers and body image satisfaction. Overall, body satisfaction was found for non-exercisers.

Additionally, the current study demonstrated that crowded gyms may lead to decreased exercise amounts, and future research may focus on more experimental correlations of the relationship of location to body image and exercise participation. Further research may also seek to understand how body image increases exercise participation rates, yet also hinders exercise location. For example, for the percentage of non-exercisers who did identify body image as a barrier to exercise participation, and what factors of an exercise routine or location would lead non-exercisers to increase exercise participation.

REFERENCES

1. Crawford S, Eklund RC. Social physique anxiety, reasons for exercise, and attitudes toward exercise settings. J Sport Exerc Psychol 16(1): 70-82, 1994.

2. Cooley E, Toray T. Body image and personality predictors of eating disorder symptoms during college years. Int J Eat Disord 30(1): 28-36, 2001.

3. Focht BC, Hausenblas HA. Perceived evaluative threat and state anxiety during exercise in women with social physique anxiety. J Appl Sport Psychol 16(4): 361-368, 2004.

4. Forrest KYL, Stuhldreher WL. Patterns and correlates of body image dissatisfaction and distortion among college students. Amer J Health Studies 22(1): 18-25, 2007.

5. Grieve FG, Wann D, Henson CT, Ford P, et al. (2006). Healthy and unhealthy weight management practices in collegiate men and women. J Sport Behav 29(3): 229-241, 2006.

6. Groves M, Biscomb K, Nevill A, Matheson H. Exercise dependence, self-esteem and identity reinforcement: a comparison of three universities in the united kingdom. Sport Soci 11(1): 59-73, 2008.

7. Harne AJ, Bixby WR. The benefit of and barriers to strength training among college-age women. J Sport Behav 28(2): 151-166, 2005.

8. Hart EA, Leary MR, Rejeski, WJ. The measurement of social physique anxiety. J Sport Exerc Psychol 11(1): 94-104, 1989.

9. Heatherton TF, Mahamedi F, Striepe M, Field AE, Keel P. A 10-year longitudinal study of body weight, dieting, and eating disorder symptoms. J Abnorm Psychol 106(1): 117–125, 1997.

10. Ingledew DK, Sullivan G. Effects of body mass and body image on exercise motives in adolescence. Psychol Sport Exerc 3: 323-338, 2001.

11. Kilpatrick M, Herbert E, Bartholomew J. College students' motivation for physical activity; differentiating men's and women's motives for sport participation and exercise. J Am Coll Health 54(2): 87-94, 2005.

12. Lantz CD, Hardy CJ, Ainsworth BE. Social physique anxiety and perceived exercise behavior. J Sport Behav 20: 83-93, 1997.

13. Leary MR. Self-presentational processes in exercise and sport. J Sport Exerc Psychol 14: 339-351, 1992.

14. Maltby J, Day L. The relationship between exercise motives and psychological well being. J Psychol 135: 651-660, 2001.

15. Patton, MQ. Qualitative Evaluation and Research Methods. Newbury Park, CA: Sage, 1990.

16. Russell WD, Cox RH. Social physique anxiety, body dissatisfaction, and self-esteem in college females of differing exercise frequency, perceived weight discrepancy, and race. J Sport Behav 26: 298-317, 2003.

17. Schlenker BR, Leary MR. Social anxiety and self-presentation: a conceptualization and model. Psychol Bull 92(3): 641-699, 1982.

18. Schuler PB, Broxon-Hutcherson A, Philipp SF, Ryan S, Isosarri RM, Robinson D. Body-shape perceptions in older adults and motivations for exercise. Percept Mot Skills 98(2): 1251-1260, 2004.

19. Smith BL, Handley P, Eldredge DA. Sex differences in exercise motivation and body image satisfaction among college students. Percept Mot Skills 86(2): 723-732, 1998.

20. Spink KS. Relation of anxiety about social physique to location of participation in physical activity. Percept Mot Skills 74(3 pt 2): 1075-1078, 1992.

21. Thomas CD, Freeman RJ. The body esteem scale: construct validity of the female subscales. J Pers 54(1-2): 204-212, 1990.

22. Tiggemann M, Williamson S. The effect of exercise on body satisfaction and self esteem as a function of age and gender. Sex Roles 43 (1-2): 119-127, 2000.

Copyright of International Journal of Exercise Science is the property of Western Kentucky University, Department of Kinesiology, Recreation & Sport and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.