

ORIGINAL RESEARCH

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# PERCEPTIONS OF RESISTANCE TRAINING AMONGST FEMALE HEALTH CLUB PATRONS

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## ABSTRACT

**Background:** Resistance training (RT) is a widely accepted component of a well-rounded exercise routine. Anecdotal information suggests that females typically view RT as a masculine activity. **Purpose:** The purpose of this study was to examine why females who are already engaged in an exercise routine are reluctant to embrace RT. **Methods:** Ninety-four (N=94) participants completed a 37-item questionnaire, developed to assess female perceptions of RT. The instrument was designed to gather information on demographics, the participants' knowledge, attitudes, and beliefs towards RT. The questionnaire was administered at three fitness facilities. Analyses were conducted using descriptive frequencies, independent sample t-test, and chi square tests. **Results:** A significant difference ( $p \leq 0.001$ ) was found between the participants who met the American College of Sports Medicine's (ACSM) recommendations and those who did not. For moderate intensity aerobic exercise duration, 59.6% of participants did not meet the ACSM recommendation (mean = 83.62 min/week). For conventional strength training frequency, 75.6% of the participants met the ACSM recommendations for RT. For functional strength training frequency, 51.0% of participants did not meet the ACSM recommendations for RT. **Conclusion:** females, who met the ACSM's recommendations for RT, did not for aerobic exercise. Females displayed knowledge of RT and did not report belief in the misconceptions of RT. Further research is needed to determine why females are participating in sufficient levels of RT, but not aerobic exercise. More detailed research should also be conducted to determine if females are participating in the adequate volume of RT.

**Keywords:** ACSM recommendations, aerobic exercise

## INTRODUCTION

Resistance training (RT), also referred to as strength training or weight training, is a form of anaerobic conditioning that uses exercises and movements involving a resistance stimulus. This stimulus should be progressively increased over the duration of a

training program in order to enhance specific muscle qualities, such as endurance, size, strength and power [15].

According to research conducted by Holviala et al [8] there are numerous benefits of RT specific to the female population. Research has shown that in young and

middle-aged women, RT increases muscular strength, flexibility lean body mass, and decreases body fat percentage [16] In older women, RT helps improve the ability to perform activities of daily living and can increase the strength, mass, power, and quality of skeletal muscle, which in turn helps prevent sarcopenia and decreases in bone mineral density (BMD) caused by aging [8].

Women may also benefit psychologically from RT. Holviala and associates [8] discovered that women of all ages who participate in RT show improvements in self-esteem, self-concept, emotional well-being, body image, and state anxiety. Ahmed and colleagues [1], found that amongst female college students enrolled in a RT class, 97.5% of the participants reported improved self-esteem, confidence, and perceptions of their body image. Strength assessments revealed a 5-11lb increase in strength in participants over 12 weeks. Furthermore, 85.3% of the students in the study reported feeling stronger, healthier, and noticed changes about their physicality resulting from the RT.

Considering the plethora of physical and psychological benefits of RT, the apparent lack of participation in RT by women is perplexing. Some researchers have hypothesized that women avoid RT because of the assumption that it will produce an increased muscular appearance [17], thus the development of undesirable, bulging muscles [15]. In western culture, the popular view of women may be as small, soft, delicate, and fragile. By gaining strength and muscularity, women may lose these characteristics described as their femininity [15]. Femininity has been described as a socially constructed standard for women's appearance, demeanor, and values.

A study by Krane et al [12] examined the conflict for NCAA Division I female student-athletes between striving for the cultural ideal of femininity and being successful athletes. Through focus group interviews, the athletes discussed their perceptions of the "ideal" feminine body and how this image contrasts with their own athletic bodies. The athletes described the ideal feminine body as "a tight, toned body." Large amounts of visible muscles symbolize "strength and masculinity" [12]. The athletes also complained about their athletic build and their muscularity. They disliked the way their bodies looked in skirts and dresses because of their muscular build. They also expressed concern that males did not find their muscular bodies attractive [12].

The purpose of this study was to examine attitudes toward RT amongst female health club patrons.

## METHODS

A 37-item questionnaire was developed to assess female perceptions of RT. The questionnaire gathered information on basic demographics as well as the participants' exercise habits and their knowledge, attitudes, and beliefs toward RT. Test-retest of the questionnaire for content validity was conducted with 27 females before beginning the study. Approval by a university Institutional Review Board (IRB) was obtained prior to beginning this research.

### *Participants*

Ninety-four (N=94) females arriving or exiting three different fitness facilities were recruited to participate in this study. Every other female member entering or exiting one of the fitness facilities was asked to participate in the study and, upon agreement, the member was given a more detailed explanation of the study, and asked to sign the

consent form. Contact information was not collected and responses were anonymous.

### Statistical Analysis

Data was analyzed using IBM SPSS Statistics for Windows, Version 21.0 (Released 2012. Armonk, NY: IBM Corp.). Analyses were conducted using descriptive frequencies, independent sample t-test, and chi square tests.

## RESULTS

The 94 female participants were predominately white, of an average weight and average body mass index (BMI) value, and attained a degree in higher education. Most (76.6%) did not identify themselves as an athlete. Defined as someone who regularly competes in organized sporting events with a minimum participation in 4 events per year. All other categories were determined using the ACSM's minimum recommendations for aerobic exercise and muscle-strengthening exercise [3].

Exercise Habits. Exercise habits are presented in Table 1. On average, more than half of the surveyed population (59.6%) did not meet the ACSM's minimum exercise guidelines of 150 minutes of moderate intensity aerobic exercise per week. The mean duration of a typical exercise bout was 61.31 minutes. The participants reported spending an average of 43.86 minutes of their exercise session at a moderate intensity. The participants reported participating in conventional strength training activities (i.e., using weight machines, lifting free weights such as dumbbells and barbells, etc.) for an average of 2.51 days per week. They also reported an average of 1.54 days of other resistance training (i.e., ViPR, kettlebells, suspension training, BodyPump class, plyometrics/body weight exercises, etc.) per week. An analysis of frequencies revealed that the majority (75.6%) of participants met the ACSM's minimum recommendation for RT activity of two days per week when they engaged in conventional strength training activities. However, more than half of participants (51.0%) did not meet the ACSM's minimum recommendation when they only engaged in other resistance training.

**Table 1.** Exercise Habits

Type of Exercise	n (%)
Moderate-Intensity Aerobic Exercise	
Low ( $\leq 149$ min/wk)	56 (59.6)
Moderate (150-224 min/wk)	18 (19.1)
High ( $\geq 225$ min/wk)	20 (21.3)
Conventional Strength Training	
Low ( $\leq 1$ days/wk)	23 (24.5)
Moderate (2-3 days/wk)	48 (51.1)
High ( $\geq 4$ days/wk)	23 (24.5)
Functional Strength Training	
Low ( $\leq 1$ days/wk)	48 (51.1)
Moderate (2-3 days/wk)	37 (39.4)
High ( $\geq 4$ days/wk)	9 (9.6)

Independent sample t-test analyses were performed to determine if there was any significant difference between those who met the ACSM's minimum recommendations and those who did not in regards to moderate intensity aerobic exercise duration, conventional strength training frequency, and functional strength training frequency. A significant difference was found between the two groups for all three comparisons. For moderate intensity aerobic exercise duration, more than half of the participants ( $n = 56$ ) did not meet the ACSM minimum recommendation. The average moderate intensity aerobic exercise duration for this group was 83.62 minutes per week. For conventional strength training frequency, the majority of the participants ( $n = 70$ ) met the ACSM minimum recommendations for RT activity. These participants reported an average of 3.16 days per week of conventional strength training. For functional strength training frequency, just over half of the participants ( $n = 48$ ), did not meet the ACSM minimum recommendations for RT activity. These participants reported an average of .25 days of functional strength training per week.

### ***The Resistance Training for Health***

Analysis of participant knowledge of RT and its health benefits are presented in Table 4. Results showed that the majority of participants believed that including RT in their exercise routine would improve muscular strength (92.6%), improve overall health (93.7%), improve performance (93.6%), and prevent osteoporosis (74.4%). These findings demonstrate that most of the participants possess an adequate level of knowledge about the health benefits of RT.

On average, 56 % of the participants demonstrated low knowledge of RT and its

health benefits while 44% demonstrated a high average of knowledge. A chi-square analysis of RT knowledge and conventional strength training frequency showed that the participants' level of RT knowledge did not significantly impact how frequently they engaged in conventional or functional strength training activities per week. The results of this analysis are presented in Table 3.

### ***Perceptions of Resistance Training.***

The following analysis investigates the perceptions of participants regarding RT. A majority of participants felt neutral about RT, with neither identifying it as overly masculine nor feminine. Of the participants who did identify RT as masculine or feminine, more women felt RT was feminine. A majority of women (79%) did not feel that RT would result in the development of bulky muscles. However, 16% did report that they felt RT would result in masculine muscles (Figures 1-3).

**Table 2.** Knowledge of Resistance Training and its Health Benefits

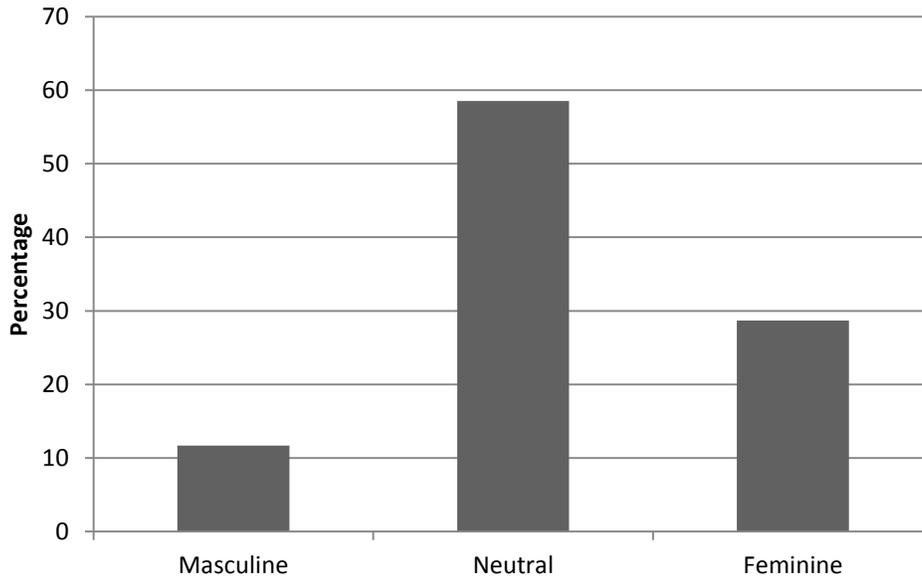
Variable	n (%)	Variable	n (%)
<b>Muscular Strength</b>		<b>Improve Overall Health</b>	
Unlikely	0 (0)	Unlikely	1 (1.1)
Somewhat Unlikely	1 (1.1)	Somewhat Unlikely	0 (0)
Neutral	6 (6.4)	Neutral	5 (5.3)
Somewhat Likely	17 (18.1)	Somewhat Likely	15 (16.0)
Likely	70 (74.5)	Likely	73 (77.7)
<b>Prevent Osteoporosis</b>		<b>Improve Performance</b>	
Unlikely	2 (2.1)	Unlikely	0 (0)
Somewhat Unlikely	4 (4.3)	Somewhat Unlikely	0 (0)
Neutral	18 (19.1)	Neutral	6 (6.4)
Somewhat Likely	21 (22.3)	Somewhat Likely	16 (17.0)
Likely	49 (52.1)	Likely	72 (76.6)

**Table 3.** Association Between Level of Resistance Training Knowledge and Strength Training Frequency

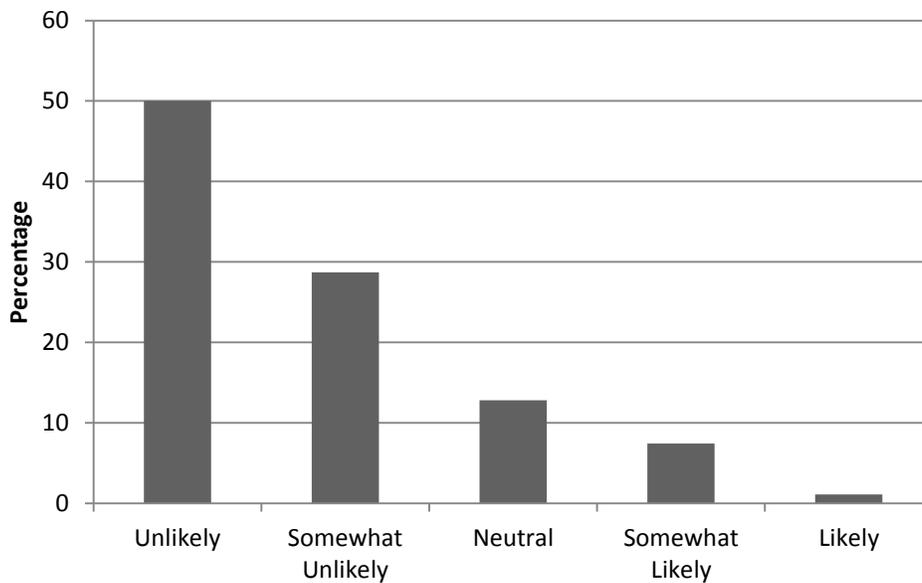
Strength Training Frequency (days/wk)	Low Knowledge of RT n (%)	High Knowledge of RT n (%)
<b>Conventional Strength Training</b>		
Low ( $\leq 1$ )	14 (14.9)	9 (9.6)
Moderate (2-3)	29 (30.9)	19 (20.2)
High ( $\geq 4$ )	10 (10.6)	13 (13.8)
<b>Functional Strength Training</b>		
Low ( $\leq 1$ )	29 (30.9)	19 (20.2)
Moderate (2-3)	20 (21.3)	17 (18.1)
High ( $\geq 4$ )	4 (4.3)	5 (5.3)

Pearson Chi Square,  $p = 0.356$

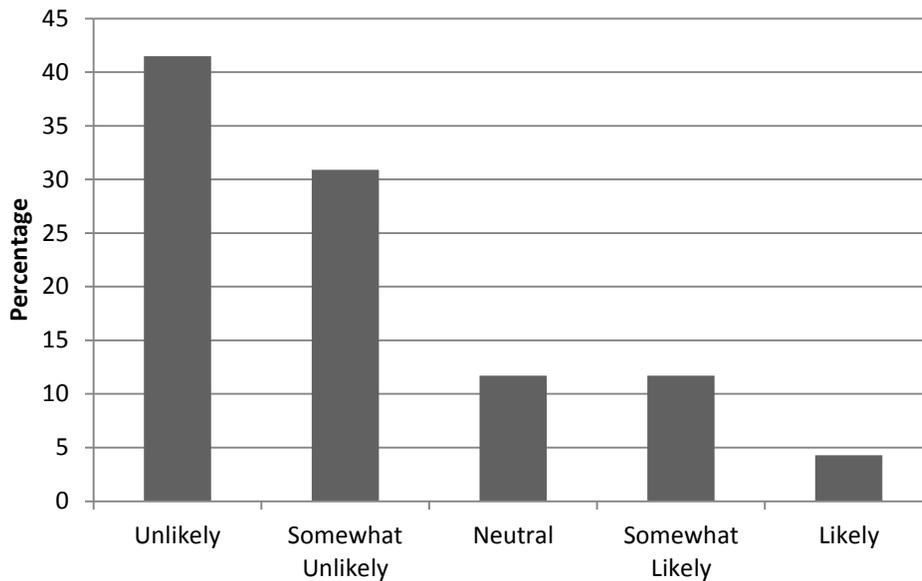
**Figure 1.** Gender Perceptions Associated with Resistance Training



**Figure 2.** Belief that Resistance Training will Result in the Development of Bulky Muscles



**Figure 3.** Belief that Lifting Heavy Weights will Result in the Development of Masculine Muscles



An independent sample t-test was conducted to investigate possible gender associations with RT. Table 4 shows that participants who reported that RT was a feminine activity also reported a higher, but not significant ( $p = 0.103$ ), frequency of conventional strength training participation, at 2.83 days per week, compared to 1.64 days per week for those who reported RT to be a masculine activity. Masculine and feminine associations with RT did not appear to have any significant association to functional strength training frequency ( $p = 0.373$ ).

**Table 4.** Relationship between Gender Associations with Resistance Training and Strength Training Frequency

Variable	n	Mean (days/wk)
<b>Conventional Strength Training</b>		
RT is Masculine	11	1.6 ± 1.1
RT is Feminine	27	2.83 ± 1.5
<b>Functional Strength Training</b>		
RT is Masculine	11	1.18 ± 1.2
RT is Feminine	26	1.96 ± 1.7

**Confidence and Self-efficacy with Resistance Training**

An assessment of participants' confidence and self-efficacy levels revealed that the majority of participants (75.5%) believed that RT is a safe activity and they found participating in RT to be pleasant (70.3%) and easy (42.5%). A majority (75.5%) also reported that they would not feel self-conscious around others if they included RT activities in their exercise routine.

When presented with the statement "I am confident that I could perform resistance training exercises if I wanted to", the majority of participants (72.3%) reported that they strongly agreed with the statement. Yet, when asked about body satisfaction, the majority of the participants (65.9%) reported they were either neutral or not satisfied with their bodies.

An evaluation of feelings of self-consciousness when engaging in RT activities showed no significant findings; however, it appeared that participants who believed RT is a safe activity, were also more likely to report that they would be "Somewhat Likely" to feel self-conscious around others while performing RT exercises.

**Perceived Barriers to Resistance Training**

Analyses of the participants' interest in RT exercises and the perception of RT being either a masculine or feminine activity are presented in Table 5. Along with these factors, other perceived barriers to engaging in RT exercises include the perceived safety of engaging in RT activities and the perceived pleasantness of engaging in RT exercises. Results show that the majority of participants find RT activities engaging (69.1%), gender neutral (58.5%), safe (75.5%), and pleasant (70.3%). Further analysis also revealed that the participants' believed they have control over their decision to perform RT exercises

(89.3%) and that it is entirely their choice to engage in RT activities (81.9%). These results are presented in Table 6.

**Table 5. Perceived Barriers to Resistance Training**

Variable	n (%)
Interest in Resistance Training	
Boring	3 (3.2)
Somewhat Boring	8 (8.5)
Neutral	16 (17.4)
Somewhat Engaging	32 (34.0)
Engaging	33 (35.1)
Gender Associated with RT	
Masculine	5 (5.3)
Somewhat Masculine	6 (6.4)
Neutral	55 (58.5)
Somewhat Feminine	14 (14.9)
Feminine	13 (13.8)

**Table 6. Decision to Participate in Resistance Training**

Statement	n (%)
"The decision to perform resistance training exercises is beyond my control"	
Strongly Disagree	74 (78.7)
Disagree	10 (10.6)
Neutral	8 (8.5)
Agree	1 (1.1)
Strongly Agree	1 (1.1)
"Whether or not I perform resistance training exercises is not entirely my choice"	69 (73.4)
Strongly Disagree	
Disagree	8 (8.5)
Neutral	6 (6.4)
Agree	4 (4.3)
Strongly Agree	7 (7.4)

## DISCUSSION

The results found in this study indicate that more than half of the participants (59.6%) reported durations of moderate intensity aerobic exercise that did not meet the ACSM's minimum recommendation of 150 minutes per week. Yet, when analyzing RT frequencies, the majority of participants (75.6%) reported engaging in conventional resistance training activities at a weekly frequency that meets the ACSM's minimum recommendation for RT activities of two days per week. Although this only represents conventional strength training frequency, it is surprising that the minimum aerobic exercise standards are not being met while the minimum RT standards are being achieved. These results are in contrast to previous findings. Chevan<sup>5</sup> reported that the results from the 2003 National Health Interview Survey revealed that only 21% of adults participated in RT at least twice a week and of this small percentage, less than half (45.7%) were women.

Participants' overall knowledge of RT revealed that more than half of the participants (56.4%) displayed a low knowledge of the health benefits of RT. Additionally, RT knowledge was not indicative of the frequency the participants engaged in conventional ( $p = .547$ ) or other ( $p = .291$ ) resistance training activities. These findings are similar to results in a study by Harne and Bixby [8], which found that college-age females, regardless of whether they participate in RT, understood the benefits of RT.

Interestingly, only 11.7% of participants reported RT to be a masculine activity whereas 28.7% reported it to be a more feminine activity. The remaining 58.5% of participants felt neutral about RT, neither identifying it as more masculine or feminine.

Additionally, a majority of women (78.7%) did not feel that RT would result in the development of bulky muscles and 72.4% did not believe that lifting heavy weights would result in the development of masculine muscles.

These findings contradict previous literature hypothesizing that women avoid RT because of the assumption that it will result in "a large increase in muscle mass" [17] and the development of "unsightly, bulging muscles" [15] Results of this study also suggest that the general population may have a different view on RT than athletes. Research by Krane and associates [12] showed that collegiate female athletes believed that masculinity was associated with being an athlete and a muscular appearance is unfeminine. Our results may differ because our analysis for this part of the study included other resistance training exercises in the operational definition of resistance training.

The majority (75.5%) of participants reported that they would not feel self-conscious around others if they included RT activities in their exercise routine and that they had confidence to perform RT exercises (72.3%). These results are similar to Poiss and colleagues' [15] research that revealed student-athletes' confidence correlated highly with their likeliness of participating in RT, regardless of gender. However, the researchers found that females were not as confident in their RT techniques as the males. It is unclear if this same discrepancy would be seen in the general population since only females were queried for this study.

Results did not identify specific barriers to RT in this sample. As the potential barriers queried actually proved not to be problematic with many of the participants finding RT activities engaging (69.1%), gender neutral (58.5%), safe (75.5%), and

pleasant (70.3%). Our results do not support the hypothesis of other research that has suggested that females are reluctant to participate in RT because it results in development of bulky, masculine muscles [8,17].

The results of this study indicate that, contrary to anecdotal evidence, females are participating in some form of RT and at a frequency that meets the ACSM's minimum recommendations. The author hypothesized that female exercisers are reluctant to include RT exercises in their fitness routines due to a lack of RT knowledge and beliefs in misconceptions that RT activities result in the development of large, bulky, masculine musculature. The findings of this study do not support this hypothesis; results show that females are including RT exercises in their fitness routine and although less than half of the participants displayed a high knowledge of the health benefits of RT, only a small percentage of all participants reported RT to be a masculine activity. Also, a majority of the participants did not have the misconceptions that RT would result in the development of bulky, masculine muscles.

The secondary hypothesis was that female exercisers are not participating in RT due to a lack of confidence in performing RT exercises and a fear of how they will be viewed by others in the public gym setting. This hypothesis was also opposed by the findings of this study; the majority of the participants reported that they would not feel self-conscious around others if they included RT activities in their exercise routine. The findings indicate that females are confident participating in RT activities and they believe they possess the ability to participate in strength training if they desire to.

An overall limitation of this study was that it only looked at females with active gym

memberships. The perceptions of RT of the surveyed participants could be much different in comparison to their female counterparts who may not participate in a regular exercise routine; therefore, the results of this study may not be generalizable to other populations.

More in-depth research should also be conducted to determine if the females who are participating in RT are truly meeting the ACSM's minimum guidelines by performing an adequate amount of exercises, sets, and repetitions as outlined in the ACSM's updated recommendations.

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