Anxiety Levels in Athletes vs. Non-athletes

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By

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Abstract

The study investigated the levels of anxiety amongst non-athletes (N=12) and athletes (N=38) at a University in West Virginia. The study suggested that non-athletes would feel more anxiety when confronted by the thought of physical activity compared to athletes. The 50 participants were both male (N=28) and female (N=22). The researcher distributed the Physical Activity and Sport Anxiety Scale (Norton, Hope & Weeks, 2004) to each participant, whom answered all 14 statements as they pertained to them individually. The study anticipated finding significance that would convert into a solid foundation for future research on body image, body type identification, body dysmorphia, and the role of college sports on physical activity and anxiety in young adults.

Highlights
- there is a chance of judgement that is the cause of anxiety that non-athletes endure
- a non-athlete may not have the stereotypical body structure of an athlete
- significant difference in anxiety levels between athletes and non-athletes

Key Words
Anxiety; athletes; Body identification; Body Dysmorphia
Introduction

Physical activity has been requiring athletes to risk their bodies as well as strain their minds for centuries. Athletes train through some of the most rigorous of circumstances to make sure they are the best when participating in their sport. Hour after hour and year after year; athletes gain recognition for their dedication and have the opportunity to earn scholarships and paychecks to further endure the next step in their competition. As competition rises, so do the expectations of others on the skills and talent of the athlete at hand. With presumed expectations riding on the backs of these athletes, their performance may be hindered. It is possible there is a chance of judgement that is the cause of anxiety that non-athletes endure, resulting in them not participating in sports or other physical activities.

Azevedo Da Silva, et al. (2012), found participants who reported practicing physical activity at recommended levels regularly had reduced odds of depressive symptoms (Azevedo Da Silva, et al., 2012), but what if physical activity essentially evokes depression as well as other negative psychological symptoms? Peers’ opinions may be a deciphering psychological factor as to why non-athletes do not participate in physical activities in the same manner as athletes. The anxiety from negative thoughts can lead to a lack of concentration, decreased confidence and motivation, and can alter an athlete’s ability to perform at the level they are capable (Covassin & et al., 2015). What was not accounted for in past studies is that not all humans are wired the same as the one next to them. People may relate to one another, as they may both play the same sport and both have a similar skill sets. However, this does not account for the fact that each human is created uniquely and has gone through their own experiences in their personal lives. One athlete may have demanding parents or may not have had the same opportunities as another person. Similarly, a non-athlete may not have the stereotypical body structure of an athlete, which can cause a non-athlete to accumulate anxiety when thinking about exercising. Negative past
experiences may also alter the way a person reacts toward certain stimuli compared to another, even though the circumstances may be the same for both persons. With the gathering of variants, not all individuals have the mental capability of performing their sport or simply exercising on a regular basis.

This correlational study proposed, non-athletes would feel more anxiety when thinking about exercising compared to athletes. This study anticipated the elimination of the idea that the same amount of anxiety is felt by an athlete and non-athlete in relation to physical activity

\( H_0: \) there is not a difference in the amount of anxiety felt between athletes and non-athletes when considering their participation in sports or any physical activity

\( H_1: \) a non-athlete will feel more anxiety when thinking about their participation in a sport or other physical activity.

The goal of this study was to determine if there was a correlation in anxiety levels between athletes and non-athletes in relation to their participation in physical activity. The levels of anxiety found in each group, athletes and non-athletes, would be beneficial in determining whether or not these anxiety levels are dissuading athletes and non-athletes in a way that makes them lack confidence during their participation in physical activity.

The study required the participation of both athletes and non-athletes. In this study, an athlete referred to a person who was proficient in sports and other forms of physical exercise. Also, an athlete would receive reciprocity for their involvement in physical activity, such as a professional athlete or a collegiate athlete. In opposition, a non-athlete is someone who either does not participate in sports or physical activity on a regular basis or is someone who does participate in physical activity but does not receive compensation. Each individual that participated in the study was asked to complete a questionnaire based on their feelings of anxiety
towards physical activity. Anxiety by definition in this study was the feeling of worry, nervousness, or unease, typically about an imminent event or something with an uncertain outcome; which would coincide with how athletes and non-athletes may feel about their physical activity. Exercise or physical activity was classified as an activity requiring physical effort, carried out specifically to sustain or improve health and fitness.

Review of Past Research

The study conducted by Frost and Moore (2006), was established with the purpose to discover what may be motivating females to exercise. The researchers used four co-ed gyms to conduct their research. At the four gyms, the Exercise Motivation Questionnaire (EMQ) was distributed to 185 women based on a convenient sampling method; 18-29 (N=112) and 30-45 (N=73). The two age ranges were used to account for changing priorities (Frost & Moore). For example, a woman in the younger age group may still be in school or just starting their career. On the contrary, a woman in the older age bracket may have a steady career or children to worry about.

The EMQ survey that each woman received consisted of ten motivational factors including, appearance, competition, enjoyment, friendship, goal achievement, losing weight, mental health, physical health, skill improvement, and social acceptance (Frost & Moore, 2006). Each of the factors also had five statements that corresponded with each, totaling in 50 questions that were all to be answered on a five-point Likert-Scale. The scale ranged from 1, strongly disagree to 5, strongly agree. When the surveys were completed, the researchers utilized t-tests to compare the means of the answers in both age groups. The results suggested, the younger age bracket ultimately exercised more often compared to their elders. The younger generation was
motivated by keeping up their appearance, working out with friends, and due to the fact that they used to be athletes and exercising is a habit (Frost & Moore).

Also, this study showed that 75% of 18 to 29-year-olds made ten-thousand dollars annually (Frost & Moore, 2006). This statistic provides significance to the current study by exhibiting other factors as to why non-athletes may not exercise. Anxiety may not even cross a non-athlete’s mind, but rather a non-athlete in college may simply have a different priority list compared to athletes, which in result keeps them away from the gym.

Despite the strong significance the previous study brings forward, it also displays many limitations. One such limitation is the use of only women in the study. Men may prove to be a valuable group to survey and expand on their results. Another limitation was the method of sampling that the researchers used. Although convenient sampling is often easier, it does not allow people outside of one group to participate in the survey. The survey was only given to members of four gym facilities, eliminating the participation of people who exercise outside of these facilities. The final possible limitation is that the researchers did not ask the individuals what their current job title was at the time of being surveyed. This would be important information considering some jobs require you to be physically active such as a police officer or fire fighter. It is possible that people in these professions receive compensation for their exercising habits much like athletes. Meaning the motivations listed by the researchers were not the only motivations that an individual may have.

In the case study by Milne and Morrison (2015); the researchers studied the psychological distress that a long-term golfer suffers, even when completing a standard golf task, such as putting. Yips are described as extreme nervousness that in this case is affecting a 52-year old golfer (Milne & Morrison). The golfer admits to having negative thoughts prior to a putt
stroke he is about to attempt, which then leads to overanalyzing a movement that he has done thousands of times and seemingly makes it look like he has never touched a golf club before (Milne & Morrison). This psychological fear of failure within the subject was the behavior addressed by a sports psychologist and a golf instructor who were working hand in hand to eliminate. The team created a behavior changing and thinking program that allowed the golfer to break down each and every piece of negative thought while conjunctionally re-learning the same stroke the golfer had prior to the yips. After three months, the end result showed significant change in the way the golfer performed. At the end of a three-month trial the self-reported yip ratio went from 65% to 15% (Milne & Morrison).

Results were displayed in a significant form after the three-month mark of psychological training, but a major reported limitation was that the case study only used one person and was not repeated (Milne & Morrison, 2015). With only one trial of the case study method, there is not enough validity and reliability to prove cause and effect between the yips ratio and the cognitive behavioral program. Another downfall is not knowing exactly what caused the negative anxiety filled thoughts that lead to the yip episodes. According to Milne and Morrison, the elevated anxiety in yip sufferers suggests that stressors may cause this phenomenon.

The previous study shows that athletes have the capability of feeling anxiety at a level that is detrimental to their athletic performance. This suggests, the current study may not result in non-athletes feeling more anxiety when thinking about their participation in an exercise in comparison to athletes.

Yusko, Buckman, White, and Pandina, conducted a study in 2008 with the purpose of testing their hypothesis, which stated that athletes have a higher frequency of illegal substance, alcohol, and performance enhancing drug use when compared to non-athletes. To complete the
study, the researchers used a convenience sampling method to gather athletes (N=392) and non-athletes (N=504) from a larger northeastern university. Each of the participants had an age between the range of 18-26 years-old (Yusko et al.).

After receiving consent from each participant, the researchers split non-athletes and athletes into two separate groups. In these groups, they were to complete a survey that consisted of self-report questions and 25 frequency questions (Yusko, et al.,2008). The survey gains reliability as many of the questions were taken from Rutgers Health and Human Development Project24 and Harvard School of Public Health College Alcohol Study (Yusko, et al.). The frequency questions were based how often the participants drank, used illicit drugs, or taken performance enhancing drugs. The results of the surveys were calculated using ANOVA and t-tests (Yusko, et al.).

At the conclusion of the statistical analysis, the data specified that more athletes used drugs, alcohol, and performance enhancing drugs than non-athletes (Yusko, et al., (2008). The data also proposed that 55% of athletes use performance enhancing drugs (Yusko, et al.). These figures give significance to the current study by indicating the possibility that the alternative hypothesis; non-athletes will experience more anxiety about exercise than non-athletes, will be accepted. The rejection of the null hypothesis would also leave the possibility that athletes could be taking performance enhancing drugs to extinguish the anxiety felt when thinking about exercising and their performance level when competing.

The previous study shows validity and reliability, but also displays limitations that take away from the results. The method used for recruiting participants was done in a convenience fashion (Yusko, et al., 2008), which is a limitation considering a northeastern university may
have a different variation of students enrolled than a university in the southern part of the country. Also, the campus at which the study was performed may have different policies when linked to alcohol and drug testing for athletes on the campus compared to another university. The survey called for open response self-report questions, which ultimately causes a problem when dealing with a participant’s retrospective memory (Yusko, et al., 2008). In this study, faulty information about the actual amount and frequency of the usage of drugs, alcohol, and performance enhancing drugs is vital to the ending statistics.

“Some studies have indicated a relationship between body image concerns and symptoms of depression or anxiety among both genders” (Davison & McCabe, 2006, pg. 1). In 2006, Davison and McCabe created a study that would involve 245 boys and 173 girls between the ages of 12 and 15 to complete multiple surveys on body image, social physique, body concealment, and body importance. The multiple surveys were selected to gather intel surrounding their hypothesis that negative body image occurs in response to psychosocial difficulties (Davison & McCabe). Each survey was answered and scored based upon their own Likert-Scales and were valid and reliable based on the use of each scale in multiple studies prior to the one that Davison and McCabe were conducting.

Due to ethical guidelines, before any of the children could participate in the study there needed to be parental consent granted. After consent was received, the individuals involved in the study were asked to use each survey and respond to the best of their abilities (Davison & McCabe, 2006). Utilizing a MANOVA test, the researchers calculated the results from the surveys to tally that girls presented more of a negative body image in comparison to the boys who took the surveys (Davison & McCabe). In regards to significance for the current study, the results also disclosed data emphasizing girls worry a majority of the time what their peers are
thinking of them (Davison & McCabe). The result of peer approval adds importance as to why a non-athlete or athlete may feel anxiety when thinking about or performing exercises.

Using children in the previous study was a limitation based upon the comprehension of the surveys they were completing, considering the participants were between the ages of 12 and 15. Also, gathering information from a group of children from one school in Australia does not gain much legitimacy when the results are used to describe a much larger population of people. Body image is viewed on a self-reported basis for the previous study, which indicates that each individual has an overall opinion of what a desirable body looks like in comparison to their own body. Without knowing the social media output of celebrities, workouts, and trends in Australia during 2006 it is difficult to conceptualizing what a younger generation views as a favored body figure at the time of taking each survey. However, if it is believed childhood idiocies continue into adulthood, the results of this study provided additional reasoning for examining body image, anxiety, and exercise.

Berning, Adams, DeBeliso, Stamford, and Newman, (2008), investigated the use of anabolic androgenic steroid (AAS) usage amongst non-athletes in college. AAS is a supplement used for gaining quick muscle strength in order to enhance physical performance. In order to bring their study to fruition, the researchers used a convenient sampling method at a popular university in the metropolitan area where they found 485 non-athletes between the ages of 19-26 years old who were willing to participate (Berning, et al.). Of these 485 participants, 219 were male and 266 were female, all of which were gathered from 13 different majors (Berning, et al.).

Post signature on the consent forms, each non-athlete was given a questionnaire to complete. Upon the questionnaire, the participant found six questions that asked about the
perceived usage of AAS and their actual usage of AAS (Berning, et al., 2008). When each participant was finished with their personal questionnaire they were reminded that all answers would remain confidential, but that they would be allowed to know the results of the study if desired. In order to obtain these results, the researchers used SPSS 11.0 to calculate the basic statistical analysis of the questionnaires (Berning, et al.).

The results were overwhelming; out of the 485 non-athlete participants only 42 (9%) said they used anabolic androgen steroids (Berning et al., 2008). This left 91% expressing that they had never used an AAS before they had taken the questionnaire. The results are effective in exposing that non-athletes are not as worried about taking a supplement that would enhance their physical performance level. The results of the previous study opposed the hypothesis of the current study, which states that non-athletes are more anxious when approaching the concept of exercise, an assumption that if they were they may take a AAS.

The previous assumption cannot be made in certainty due to the limitations of the previous study. The previous study only used non-athletes from a university, rather than using athletes as well. With statistics of both athletes and non-athletes, more evidence would be brought forth as to who statistically uses AASs more. Even with statistics comparing athletes and non-athletes, causation for the usage of AASs would be unknown. The previous study holds small value in comparison to a large population for two reasons. The first reason is visible due to the questionnaire. The questionnaire used during the study was created by the researchers who gathered information solely from power-lifting coaches and sport coaches on the specific campus where they gathered their participants (Berning, et al., 2008). In order to gain validity and reliability, the researchers should have found similar research on the topic of their study and incorporated past information into their own. The second reason the previous research holds
insignificant value as a whole comes in result from the small population used to complete the study. The number of participants used in the study is not comparable to a large population.

Boros, Fontana, and Mack (2017), explored the concept based upon female college students’ physical activity engagement, and if engagement was affected by the teasing received or not received from their peers. The sample size for the study was gathered by the utilization of the convenient sampling method. In result of the convenient sampling, 90 females participated (Boros et al.). All 90 females were of many different ethnical backgrounds and body types.

The previous study incorporated three instruments including, an Anthropometric Unit (AU), a Perception of Teasing Scale (POTS), and a Physical Enjoyment Scale (PES) (Boros, et al., 2017). The AU measured the body fat percentage, height, and weight of each participant during the study. Using a Likert-Scale, 1, never and 5, very often, the POTS measured the frequency of teasing the participant had endured (Boros, et al.). Finally, the PES represented the amount of enjoyment each individual felt towards exercising. The PES also used a Likert-Scale, 1, no enjoyment and 5, very much enjoy (Boros, et al.). After each participant completed all three portions of the study, t-test were used to accumulate the comparison between the number or females who were teased and not teased. The results calculated from that comparison were then used in another t-test that established if there was a correlation between being teased and the enjoyment of physical activity (Boros, et al.).

37% of the participants had in some form been teased based upon weight related issues (Boros, et al., 2017). When the 37% of teasing victims were tested for correlation with enjoyment of exercise, the results showed that these individuals took part in less physical activity and physical activity enjoyment in comparison to the participants that were not teased (Boros, et
The correlation between teasing and lack of exercise enjoyment adds significance to the current study as the results show peers’ opinions may create the anxiety that dictates a non-athlete’s yearning to exercise.

Not only did the previous study lack a large sample size, but it also included only female responses. Peer pressure may not be gender biased, but the previous study does not integrate a way for an outsider to gain that knowledge. The current study focuses primarily between two groups of participants, athletes and non-athletes. The previous study may contain both sets of individuals, but the demographics did not clarify whether or not each person was an athlete or non-athlete. The data that could have been collected knowing the status of an athlete or non-athlete would have created another factor that could have explained why a person finds enjoyment in exercising or not.

Methods

Participants

This study involved 50 students from a college in West Virginia. All participants were in the undergraduate program and were chosen based on a convenient sampling method from random areas throughout the campus. The selection was completed sporadically on a daily basis for a week. The only required criteria for each participant is that they were an enrolled undergraduate student at the university, which meant graduate students, professors, and other staff on the campus were excluded from participation.

Procedure

After utilizing a convenient sampling method to find students that were willing to participate, the participants were handed a consent form that they were asked to read and confirm
that they understood the directions. When the consent form was signed, the participants were handed a questionnaire. The questionnaire consisted of a demographics section asking the participants their age, grade level, gender, and if they were an athlete or non-athlete. Next, the participants were individually asked to follow the guidelines of the questionnaire and to rank the 16 statements based on how each statement pertained to them personally. The ranking scale ranged from 1, not at all a characteristic of me and 5, extremely a characteristic of me. When the questionnaire was completed, it was retrieved by the researcher and the participants were debriefed and reminded that all their answers would be kept confidential. If they had any questions they were requested to email the researcher.

Scale

The scale that was used for this study was the Physical Activity and Sport Anxiety Scale (Norton, Hope & Weeks, 2004) (see Appendix A). The Physical Activity and Sport Anxiety Scale gained reliability and validity by its constant use in studies similar to, Curvilinear Relationships Between Statistics Anxiety and Performance Along Undergraduate Students: Evidence for Optimal Anxiety (Keeley, Zayac & Correia, 2006). Also, the scale can be found in the Journal of Psychopathology and Behavioral Assessment (Levinson, Rodebaugh, Menatti et al., 2013). The scale consisted of 16 statements that would be ranked based on the individual’s personal characteristics in relation to physical activity and anxiety. The scale ranged from 1, not at all a characteristic of the participant to 5, extremely a characteristic of the participant. The results were totaled by adding the numbers of each ranking after reversing the scores on statements 3, 11, and 14. If the summed total on the questionnaire was high that meant more anxiety was felt by a person towards physical activity. In comparison, a person with a low total on the questionnaire felt less anxiety about physical activity.
After the total was calculated for each participant, the results were inputted into the IBM SPSS Statistics System. Participants were separated into two groups, athletes and non-athletes, and their scores were entered into the system so that they kept this separation. The separation during the data input was necessary when comparing the means of each group’s data. The two means were used in a t-test. A t-test is described as an assessment of whether the means of two groups are statistically different from one another (T Test, n.d.). The results determined which group, athletes or non-athletes, felt more anxiety when confronted with physical activity.

Results

After the questionnaires were completed by the 50 participants, the results were used to assist in performing a one-way ANOVA test. The test relied on the independent variable (athlete or non-athlete) and the dependent variable (total number marked for each statement tallied at the completion of each individual survey).

According to the solutions of the one-way ANOVA test, there was significance found in the study (F (1,48) = 11.66, p<0.01) (Appendix C). Athletes had a calculated mean of 29.42 with a standard deviation of 6.5. While Non-athletes had a calculated mean of 40.75 and a standard deviation of 17.8 (Appendix B). The significance of the study was reevaluated by testing to see if there were any covariates that may have altered the data, such as gender. Gender of the participants statistically did not show to have any effects on the significance of this study (Appendix D).

Discussion

The goal of this study was to determine if there was any significant difference in anxiety levels between athletes and non-athletes while considering or partaking in physical activity.
After calculation, the data suggests that the null hypothesis; there is not a difference in the amount of anxiety felt between athletes and non-athletes when considering their participation in sports or any physical activity, was rejected. Non-athletes showed greater levels of anxiety through their responses to the questionnaire in comparison to athletes.

During the process of conducting this study, there were several limitations that could have impacted the results. One limitation was the small sample size of only fifty students. Using only fifty students makes the data less significant when attempting to predict trends on other campuses that could be facing the same anxiety issues with their students. During the debriefing which followed the completion of the questionnaires, the participants were confused whether they should have considered themselves an athlete or a non-athlete while participating in the study. Considering the study was based on whether or not a participant was an athlete or non-athlete, this was a major limitation that could have swayed the results. In future studies, it would be vital for the researcher to give clear definitions as to whom would qualify as a non-athlete or an athlete. The last limitation was the number of athletes in the population at the school used for the study. While it was found that the number of athletes who participated compared to non-athletes was not significant to the results statistically, it could have an impact on the mindset of the students on the campus. This limitation could come into effect when compared to another campus whose population is more non-athletes.

Finding the results of this study significant is beneficial in allowing future research to explore why non-athletes feel anxiety that makes them stray from participation in physical activity. If future research could pinpoint the cause of anxiety felt by non-athletes, then these results would be even more beneficial in helping eliminate health problems that result from individuals not taking care of themselves. In order to gather more information, future research
should dive into the depths of societal viewpoints of men and women and the various expectations placed upon each gender that may be linked to anxiety.
(Appendix A)

### Demographics

<table>
<thead>
<tr>
<th>Gender Identification:</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td>18-22</td>
<td>23-27</td>
</tr>
<tr>
<td>Year in School:</td>
<td>Freshman</td>
<td>Sophomore</td>
</tr>
<tr>
<td>Athlete:</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Physical Activity and Sport Anxiety Scale (Norton, Hope & Weeks, 2004)**

**Directions:** These statements describe how a person might feel of think while participating in athletic activities. Please rate how characteristic each statement is of you while playing sports or exercising/working-out.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 Not at all characteristic of me</th>
<th>2 Slightly characteristic of me</th>
<th>3 Moderately characteristic of me</th>
<th>4 Very characteristic of me</th>
<th>5 Extremely characteristic of me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I worry about what people will think of me while playing sports, even though it will not make any difference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I feel that I will humiliate myself when I play sports.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I rarely worry about what kind of impression I am making on someone while exercising/workin g out.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I am usually worried about what kind of impression I make while playing sports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. I am afraid that people will find fault with my performance while playing sports.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Sometimes I think I am too concerned with what other people think about my performance while exercising/workin g out</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. I feel nervous if other people are watching me when I am exercising/workin g out.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. I usually get nervous when I play sports in front of even a few people who are watching.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. I feel that I will humiliate myself when I exercise/work out.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. I don’t want the ball to come to me when I play team sports.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11. Other people’s opinions of how well I play sports do not bother me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13. I pass the ball to a teammate when I get nervous.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. I could not care less if an audience was watching me perform
15. I avoid social gatherings if I think they will involve an athletic activity
16. I avoid exercising/workin g out where others can see me

(Appendix B)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Minimu m</th>
<th>Maximu m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athle te</td>
<td>38</td>
<td>29.4211</td>
<td>6.52078</td>
<td>1.05781</td>
<td>27.2777 - 31.5644</td>
<td>19.00</td>
<td>49.00</td>
</tr>
<tr>
<td>Non-athlet e</td>
<td>12</td>
<td>40.7500</td>
<td>17.17887</td>
<td>4.95911</td>
<td>29.8351 - 51.6649</td>
<td>25.00</td>
<td>75.00</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>32.1400</td>
<td>11.05646</td>
<td>1.56362</td>
<td>28.9978 - 35.2822</td>
<td>19.00</td>
<td>75.00</td>
</tr>
</tbody>
</table>

(Appendix C)

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1170.507</td>
<td>1</td>
<td>1170.507</td>
<td>11.658</td>
<td>.001</td>
</tr>
<tr>
<td>Within Groups</td>
<td>4819.513</td>
<td>48</td>
<td>100.407</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5990.020</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Tests of Between-Subjects Effects

(Appendix D)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>1716.170a</td>
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<td>858.085</td>
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a. R Squared = .287 (Adjusted R Squared = .256)
Resources


https://doi.org/10.1007/s10862-012-9326-1

