

Improving Student Athletes' Ability to Cope with Stress

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ABSTRACT

The purpose of this study was to examine if pre-match stress reduction techniques would impact the performance of wrestlers against quality competition. The participants were selected from Loyola Blakefield High School. The participants are current athletes of the school's wrestling program. All participants are males ranging in age from 14-18 years old. This study was conducted using a causal-comparative design with a convenience sample. There were five wrestlers in each treatment group (breathing, imagery, or control). The results revealed no significant variance in performance between the experimental or the control group, though the findings could be attributed to a number of factors. Future research on discovering effective stress reduction methods prior to competition would continue the evolution of how athletes prepare mentally for optimal performance.

CHAPTER I

INTRODUCTION

Overview

In all sports, competitive, intramural, or recreational, an athlete's mental abilities are as imperative to their success as their physical skill sets. Research and studies suggest athletes have a greater chance of achieving success if they train with trainers who train their minds in addition to their bodies. In fact, the mental aptitude of an athlete often separates them from their competitors. However, stressors and anxieties often deter athletes from demonstrating positive mental abilities and negatively affect physical performance. Hence, research has been conducted to find techniques that best help athletes alleviate stress and anxiety. The most effective techniques have been found to be breathing techniques, positive self-talk and imagery, listening to music and motivational speech.

In the sport of wrestling, an athlete's mental toughness and aptitude are essential for overcoming highly skilled competitors. However, it is equally essential to overcome the performance limiting stress and anxiety. Wrestling is an individual combat sport where the athlete relies mostly on their own mental and physical abilities. Wrestlers also receive instruction from their coach/es, but this element of assistance is only as effective as the wrestler's ability to execute strategic coaching. Thus, a successful wrestler must be mentally tough in addition to physically adept to overcome the stress of competition and achieve success. Success is defined as improved performance over previous results versus a competitor or similarly-skilled competition. This study has been conducted to determine what stress management technique(s) are most effective for wrestlers prior to competition.

Statement of Problem

The purpose of this study is to determine if stress-relieving techniques prior to competition influences the overall success of the wrestlers.

Statement of Null Hypothesis

The type of stress-relieving technique used by a wrestler, prior to competition, has no effect on the level of success as determined by performance at the Maryland Independent Schools State Wrestling Championships.

Operational Definitions

In this study, the definition of an athlete refers to an individual participating at the varsity level for the Loyola Blakefield High School wrestling team as a part of the Maryland Interscholastic Athletic Association. The independent variable is the different pre-match techniques used to achieve optimal stress levels. These techniques include breathing techniques, positive self-talk and imagery, listening to music and motivational speech. The dependent variable is the success of the athlete measured by improved performance over previous results versus a competitor or similarly-skilled competition at the Maryland Independent Schools State Wrestling Championships.

CHAPTER II

REVIEW OF THE LITERATURE

This literature review explores how stress can affect athletic performance and strategies and interventions to help alleviate intrinsic and extrinsic stressors. Section one will outline and define different origins of stress for the average student-athlete. Section two details various stress management techniques and strategies that have successfully helped student-athletes alleviate stress. Finally, section three will give practical suggestions for coaches or those in athletic leadership to adequately identify and assist student-athletes who exhibit performance-reducing attributes due to stress.

Origins of Stress

Everyone consistently experiences some level of stress in life. While not all stress is bad, for example eustress, many stressors have consequences that impact the person experiencing the stress and others in direct relationship with the stressed person in an adverse way. Stress is defined as physical, mental, or emotional tension, and although exercise and athletic participation is often praised for its benefits on mental health and psychological well-being, research suggests that a student's participation in athletics can itself become an additional source of stress (Weathington et al., 2010). Stress is a part of life for the average student. However, add the normal stressors of life and extracurricular activity that comes with additional responsibilities, then you have the plight of student-athletes all over the world. The literature review revealed five major sources of stress for the student-athlete: academic, family/environment, coaching/program pressures, intrinsic pressure and mental health conditions which impact experiences and performance.

For academics, a higher demand and responsibility is placed on the student-athlete than students who do not participate in extracurricular activities. This is usually a volume of responsibility issue. Not only are student-athletes responsible for their studies, but also the demands placed on them by the program in which they participate. This is particularly true in the case of freshmen, who are often attempting to acclimate themselves to a different level of academia and logistical structure. More responsibility is put on the student-athlete with less and less guidance from the instructor. In education, this is called a “gradual release” which often feels anything but gradual to the student-athlete experiencing this type of workload or level of responsibility academically without any preparation. According to research, freshman and sophomores report higher levels of academic stress than upperclassmen. Upperclassmen student-athletes have had some time to develop a system and establish a routine that works best for them to be able to balance all the demands placed upon them. Student-athletes who earn lower grades may have a negative self-perception of their academic abilities. This could trickle into their self-belief about accomplishing their athletic goals as well.

Family and environment transitions can also have an impact on the stress levels of student-athletes, especially ones from adverse backgrounds. Yet, in order to be effective, college counselors must have an understanding of their students’ experiences; especially those, who work with students in education opportunity programs, as the students in these programs face unique issues related to their cultural experiences and academic preparation (Finnemore, 2017). Expectations, or the lack thereof, placed upon student-athletes by their parents is a high source of stress for student-athletes. For most student-athletes who are moving onto campus, this is their first experience away from the comforts of home on a consistent basis. That alone can cause numerous reasons for anxiety. Being outside of your realm of comfort and needing to adapt to

others around you in a new social living environment can cause increased stress. Roommate conflicts are inevitable when you are most likely living with a stranger for the first time in your life. The disagreements often stem from different upbringings and expectation clashes. Environment stressors can affect the relationship with those around you. Additionally, if the environment of the residence hall is not conducive for studying, then that lends itself to not just environmental stress, but academic stress as well. When academics are affected, biological factors such as sleep loss and illness can occur. Both symptoms are stressors themselves. We will discuss physiological effects such as illness momentarily.

Stressors from the demands of the coach or being a part of an athletic program is another major source of stress for the student-athlete. These stressors can be due to the physical demands that are placed upon the student-athlete such as workouts, practices and performing during competitions. Having to complete the same work as regular students despite tiredness, soreness or injuries can also become a major source of stress. There are also time and scheduling demands that are placed upon the student-athlete in the form of balancing class schedules with practice schedules. The student-athlete is still responsible for work that is due while they are traveling for competitions as well. These demands are not just relegated to the season, as many student-athletes are asked to participate in offseason training simply to keep up with the competition or stay ahead of their teammates on the depth chart. There are also mental demands that are required of the student-athlete by the coach or the program such as taking on the mindset or mantra of the program, additional film study, how hard the coaching staff pushes an athlete mentally and how they provide feedback. These are all factors towards the student-athletes' mental health. In fact, constructive criticism is essential for helping to improve one's performance. Unfortunately, not all athletes share this perspective. For some, receiving

constructive criticism or feedback can be very stressful (J. Gilbert, et al., 2007). If grades begin to decrease, then the status of a student-athlete with the program could come into question. This could affect any athletic or academic scholarship the student-athlete may be on which is another source of stress. Thus, the stressor of time management due to the demands of the program can become a major source of stress.

The next origin of stress we will look at is the ways stress originates intrinsically. Student-athletes, like most other people who are invested physically, emotionally, and mentally into something, put pressure and stress on themselves. Some pressures include attempting to live up to family expectations of academic or athletic achievement, perform on par with peers in both the athletic and academic arena and even compete with traditional students who do not have as much responsibility or demand placed upon them. Research has revealed that young men and women have admitted to feeling stress about living up to the expectations of a family where college graduation is expected, or their parent or sibling performed well as an athlete. Additionally, student-athletes put pressure on themselves to continue to perform just as well, if not better, as their teammates on the field of competition and inside the classroom. If the student-athlete is not performing well in competitions, they tend to show signs of low self-esteem or a lower perception of self-belief. Student-athletes can also fall into comparing themselves to non-traditional students. This leads to unrealistic expectations about their own abilities and can bring about depression. The topic of procrastination or simply not having enough time or motivation to complete all tasks, especially academic is another way the student-athlete put pressure on themselves.

Finally, we will explore how mental health conditions can impact experiences and performance. There have been numerous psychological studies done that have indicated that student-athletes have a higher risk of developing psychological disorders as compared to traditional students. There is a growing request by the athletic community that sports medicine physicians become more proactive and intentional about monitoring developing psychological disorders in patients. A hindrance to this is physicians are less likely to discuss non-physical related injuries. Educating athletes on the types of questions they can ask their physicians can improve the chances of diagnosing and treating developing psychological disorders. Physicians should also consider how physical injury is related to psychological issues. Chronic Traumatic Encephalopathy (CTE) studies have shown that the brains of athletes who have repeated trauma are much more likely to fall into depression and/or commit suicide. This can also be seen in the reverse. Studies have shown people suffering from psychological issues do not recover as well physically. Physical and psychological issues perpetuate each other. An example of this is overtraining. Overtraining is typically done by a student-athlete who has anxiety about the consequences of a decrease in performance. However, this often leads to injury which results in the removal of the ability to perform at all. Not competing can also become a source of anxiety and depression which in turn hinders physical healing. “Psychological distress reliably predicts the occurrence of adverse health-related outcomes” (C. Sorna, 2016, p.66). Many studies have also found physiological responses to stress. A reaction, such as the fight or flight response, can lead to increases in metabolism and reduction in non-essential body functions as the body prepares for increased energy needed to respond to the stressor. Other physical effects of stress include asthma, rheumatoid arthritis, HIV/AIDS, and certain types of cancers. Increased stress

affects immune functioning, which increases an individual's risk for colds, flu, and other illnesses (Finnemore, 2017).

Interventions to Help Reduce Student-Athletes' Stress

Being able to identify the type of stress the student-athlete is experiencing is a major component of intervention. There are four major stressors: acute, sequence, chronic and intermittent. Acute is a time-limited stressor. An example is being in the deep end of a swimming pool for someone who does not know how to swim. Sequence can be described by using the stages of grief after the loss of a loved one. Chronic and intermittent are stressors that are constant but vary in the degree of intensity depending on timing. After determining the type of stress, the student-athlete is experiencing, then the appropriate next steps need to be determined. Acute stress can be remedied by removing the stimulus or circumstance that causes the stress. Sequential stress needs a bit more patience because there is a process that must be navigated in order for the stressor to become removed or intermittent. Chronic and intermittent stress is best managed by creating strategies or systems to help navigate the effects of the stimulus. These systems could consist of professional counseling or the strategies and techniques we are about to discuss.

Learning to adapt to stressors helps prevent long-term psychological effects. Everyone has different capacities and cognitive abilities to handle different situations. Almost all student-athletes experience pre-competition anxiety. However, the degree of which the student-athlete experiences the anxiety reliably predicts success or failure in competition. Oftentimes, the anxieties are either cognitive or somatic. Cognitive anxiety is brought on by mental stress reactions to a stimulus or circumstance. Somatic anxiety is the physical response to the stimulus

or circumstance such as not being able to breathe or feeling weak in your legs due to nervousness. Fortunately, psychologists have developed multiple techniques for relieving stress. Techniques include rational emotive therapy (RET). The process of RET is to help the student-athlete evaluate and interpret the competitive circumstance from a rational perspective. This can be done by reminding the student-athlete of the outcome of previous similar experiences. Hopefully, after a few successful outings, the reaction to competition is not as heightened. Somatic anxiety is much more complex and may require extensive professional help. This is due to the student-athlete's autonomic response to a certain circumstance which usually is not easily undone. For example, if height makes a person feel sick, their body's response usually does not change with a pep talk. Relaxation strategies such as meditation, breathing, and positive imagery help reduce somatic anxiety. Another tool for relieving stress is Cognitive Behavioral Stress Management (CBSM) as studied by Perna et al. on collegiate rowers. CBSM involves "relaxation training, imagery, and cognitive reconstruction", and has been found to, "decrease competitive anxiety and improve performance among athletes", as well as reduce pain from surgery and quicken recovery time (C. Sorna, 2016, p.14). Other techniques include positive self-talk and visualization. These two techniques together can reduce both cognitive and somatic anxiety simultaneously. Finally, music has been found to promote thoughts that encourage physical activity. The student-athlete can either use it to motivate themselves for competition or listen to calming music that will help them relax from elevated levels of anxiety. Studies have also found that music dulls the sensations of fatigue or other distractions because the music narrows the individual's attention. If not properly managed, "Excessive stress reduces work effectiveness, contributes to bad habits, and results in negative long-term consequences,

including addictions, crime, absenteeism, poor academic performance, school dropout, professional burnout, and ultimately, career failure” (C. Sorna, 2016, p.8).

Practical Suggestions for Coaches and Athletic Leadership

Coaches and those in athletic leadership should evaluate how they could be contributing to the psychological issues of their student-athletes. Only getting to know a student-athlete in a superficial way increases the chances of presenting them with a stimulus they are not able to handle. The psychological effects of poor coaching can have lasting, adverse effects on the student-athlete. This can result in chronic episodes of anxiety both on and off the field of competition. For example, yelling may motivate some student-athletes to do better, yet cause others’ self-confidence to dwindle or lash out in an angry, unfocused way. Also, be vigilant of athlete’s coping mechanisms. It can look like a student-athlete is able to handle the stimulus, but they could be becoming disengaged, having self-doubt, contemplating transferring schools, or leaving the sport altogether. The coach-athlete relationship is a good place to start when evaluating or predicting potential psychological issues. “The study conducted by Weathington et al. (2010), provides partial support that a relationship between student-athlete motivational variables and coaching likeability and technical expertise exists. The finding that higher coaching likeability is correlated with lower levels of perceived stress in student-athletes supports the literature suggesting that student-athlete anxiety is lower when they have a more compatible relationship with their coach...” With this in mind, it is imperative for coaches to differentiate their approach to each individual student-athlete to put them in the best position possible to be successful in all aspects.

CHAPTER III

METHODS

Design

This study was conducted using a causal-comparative design with a convenience sample. This study utilized a convenience sample because the participants were existing athletes of the researcher. The athletes were chosen based on their participation on the varsity wrestling team at Loyola Blakefield High School. The athletes were given a survey about their preferred technique for pre-match stress reduction. There were no pre-assessments or post-assessment given regarding the athlete's preferred stress reduction technique. The two experimental groups were assigned their secondary or tertiary preference to better measure effectiveness. The independent variable is the different pre-match techniques used by the varsity wrestlers of Loyola Blakefield to achieve optimal stress levels. The dependent variable is the success of the wrestlers measured by their placement at the Maryland Independent Schools State Wrestling Championships.

Participants

The participants were selected from Loyola Blakefield High School. The participants are current athletes of the school's wrestling program. All participants are males, and their ages range from 14-18 years old.

Instrument

The instrument utilized in this study was a survey. The survey asked each wrestler to identify their preferred method of pre-match stress reduction. The options were breathing, motivational speech from their coach, positive self-talk/imagery and listening to music. They ranked each method by assigning it a number. The completed surveys were analyzed, and three groups were formed based on the wrestler's ability and their secondary and/or tertiary preferred

method of pre-match stress reduction. One group was assigned breathing techniques and motivational speech from their coach. Another group was assigned positive self-talk/imagery and listening to music. The final group (control group) was not assigned any of the techniques. These techniques were implemented during the regular season and at the Maryland Independent Schools State Wrestling Championships.

Procedure

The participants and parents were notified via email of the study. Once wrestlers opted in or received permission from parents (student-athletes under the age of 18), they were administered the survey, asked to complete the survey by hand, and return it to the researcher. The direction on the survey was to assign a number one through four (four being most preferred and one being least preferred) to each pre-match stress reduction technique. The survey can be found in appendix A.

The completed surveys were then analyzed, and three groups were formed based on the wrestler's ability and their secondary and/or tertiary preferred method of pre-match stress reduction. These techniques were implemented every practice before the live wrestling session, during the regular season dual meet schedule and at the Maryland Independent Schools State Wrestling Championships.

CHAPTER IV

RESULTS

Analysis of the Data

This study examined if pre-match stress reduction techniques will impact the performance of each wrestler against quality competition. Each wrestler was surveyed on what stress-relieving techniques they preferred. The researcher assigned groups their secondary and tertiary preferred stress reduction techniques. This was done to ensure no one used their primary stress relief technique, thus making it difficult to assess whether the stress-reduction techniques helped or if their performance is due to preexisting factors. Group 1 was assigned breathing techniques and motivational speech from their coach. Group 2 was not assigned any of the techniques Group 3 was assigned positive self-talk/imagery and listening to music. Group 1 showed an average improvement of placement at the Maryland Independent Schools State Wrestling Championships of (2.0). Group 2 showed an average improvement of placement at the Maryland Independent Schools State Wrestling Championships of (2.0). Group 3 showed an average improvement of placement at the Maryland Independent Schools State Wrestling Championships of (2.8). The data shows placement improvement in all three groups: even the control group. However, there was similar improvement in both the experimental and control group. There is no statistical difference between groups 1 and 2, while there is only minimal statistical difference in group 3. The difference in group 3 could be attributed to two freshmen coming in and making an impact by placing at the Maryland Independent Schools State Wrestling Championships. This was the only such group comprised of such performances. Did not place (DNP) or Not Applicable (N/A) were assigned tied for 9th place finishes. This is statistically given to each wrestler who does not finish on the podium (top 8).

There were several analyses run using Pearson's chi-squared test. Having at most five wrestlers per treatment likely impeded the chance of detecting true median outcome differences among the three treatments. Even so, visual inspection of the three treatment medians for each outcome confirms that there were little effects of the treatments upon improvement in competitive performance. The null hypothesis was retained.

For the benefit of other researchers, tables and graphs of the data are depicted below. Though the data shows statistical improvement in placement, there is scant statistical difference between the treatment groups in any of the comparisons.

Table 1

*Test of Equality of Median Skills by Treatment***Table 1. Test of Equality of Median Skills by Treatment**

Greater than the median	breathing	Group control	imagery	Total
no	3	3	2	8
yes	2	2	3	7
Total	5	5	5	15

Pearson chi2(2) = 0.5357 Pr = 0.765

Table 2

*Test of Equality of Median School Year 2020 Scores by Treatment***Table 2. Test of Equality of Median School Year 2020 Scores by Treatment**

Greater than the median	breathing	Group control	imagery	Total
no	2	2	2	6
yes	2	2	1	5
Total	4	4	3	11

Pearson chi2(2) = 0.2444 Pr = 0.885

Table 3

*Test of Equality of Median School Year 2021 Scores by Treatment***Table 3. Test of Equality of Median School year 2021 Scores by Treatment**

Greater than the median	breathing	Group control	imagery	Total
no	3	2	3	8
yes	1	2	1	4
Total	4	4	4	12

Pearson chi2(2) = 0.7500 Pr = 0.687

Table 4

*Test of Equality of Median Improvement Scores by Treatment**Table 4. Test of Equality of Median Improvement Scores by Treatment*

Greater than the median	breathing	Group control	imagery	Total
no	3	4	3	10
yes	2	1	2	5
Total	5	5	5	15

Pearson chi2(2) = 0.6000 Pr = 0.741

Table 5

*Test of Equality of Median Wrestlers' Weights (lbs.) by Treatment**Table 5. Test of Equality of Median Wrestlers' Weights (lbs.) by Treatment*

Greater than the median	breathing	Group control	imagery	Total
no	1	3	3	7
yes	3	2	2	7
Total	4	5	5	14

Pearson chi2(2) = 1.4000 Pr = 0.497

Table 6

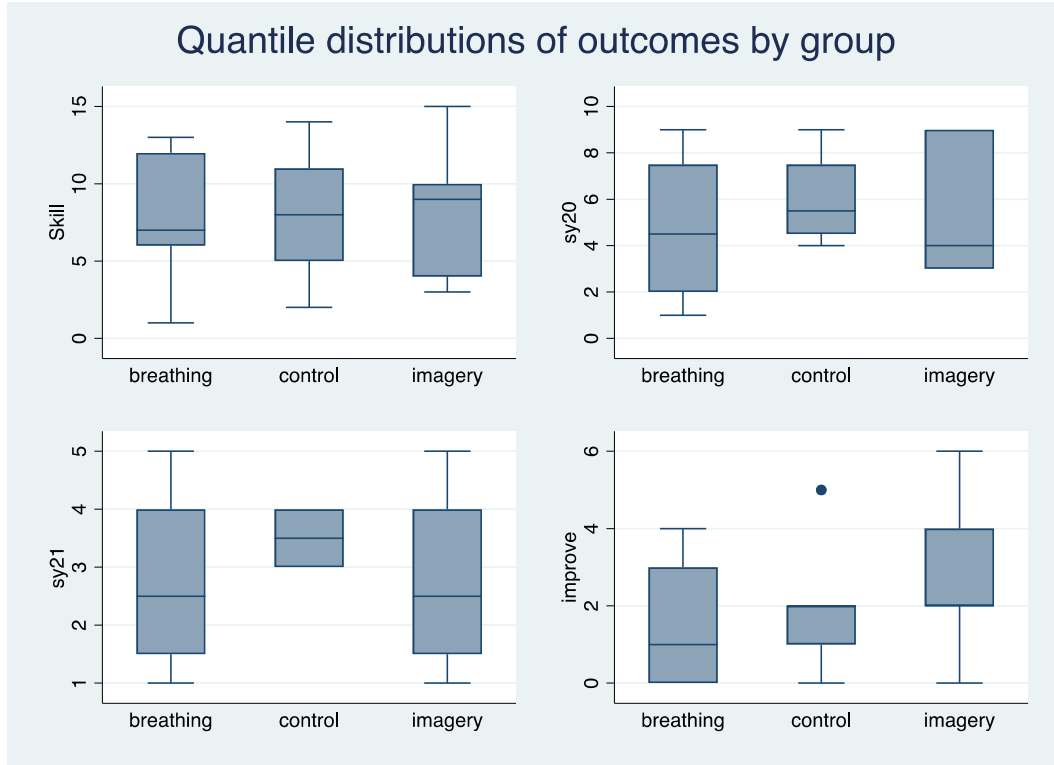
*Medians of Outcomes by Treatment**Table 6. Medians of Outcomes by Treatment*

Summary statistics: p50

by categories of: group (Group)

group	skill	sy20	sy21	improve	weight
breathing	7	4.5	2.5	1	171
control	8	5.5	3.5	2	138
imagery	9	4	2.5	2	145
Total	8	5	3	2	148.5

Figure 1



Box plots display the data by quarters of the dependent variables (skill, SY20, SY21, and improvement) within each independent variable category (breathing, imagery, and control). The box shows the range of the second and third quarters, the middle 50% of the data. The vertical lines extend the range to the lowest and highest 25% of the data. Extreme individuals are indicated by dots. These data points exceed 1.5x the interquartile range (length of the box). One wrestler in the control group attained an extremely large improvement over two years of the championship tournament.

Table 7

Data List of Participants

Group	Skill	SY20	SY21	Improve
imagery	9	.	3	6
control	11	4	3	1
imagery	15	9	.	0
breathing	6	6	3	3
control	5	5	3	2
control	2	.	4	5
imagery	10	.	5	4
control	8	6	4	2
breathing	7	3	2	1
imagery	3	4	2	2
breathing	1	1	1	0
imagery	4	3	1	2
breathing	12	9	5	4
control	14	9	.	0
breathing	13	.	.	0

CHAPTER V

DISCUSSION

This study examined if pre-match stress reduction techniques would impact the performance of wrestlers against quality competition. Statistical analysis of the data indicated the wrestler's performance did not differ significantly among the three techniques: breathing techniques and motivational speech, positive self-talk/imagery and listening to music, and control groups that used no stress reduction approach.

Implications of Results

The implication of results demonstrates that focusing on a specific pre-match stress reduction technique does not significantly improve performance more than others or not having a pre-match stress deduction routine at all. The researcher cannot conclusively attribute the improvement in placement at the Maryland Independent State Championships to the stress reduction technique and ignore the possible effect of other factors such as the graduation of top-level competition from the previous year, the natural progression of skills and improved incoming talent. Additionally, the study did not test the level of competency of the wrestler when using the stress reduction technique. Therefore, suggesting one technique improves performance over another technique without considering other factors could result in an erroneous conclusion. Also, the current study had five wrestlers assigned to each stress reduction method. With such small samples, the power of any statistical test to detect a true population difference in outcomes among treatments is severely limited.

Threats to Validity

There were three groups whose performance were compared based upon preparation techniques used prior to competition. The threats to validity are both internal and external. With

respect to this study, five threats to internal validity have been defined: history, maturation, instrumentation, regression, and interaction of threats. The degree of control which the researcher had over the history of performance in a particular weight class was minimal. Similarly, the researcher was not able to control the natural maturation of skill in each wrestler, their competition, and the movement of opponents between weight classes. The researcher was also not able to control whether wrestlers unknowingly or intentionally regressed back to pre-match routines. Finally, there is minimal control over the interaction of the threats to validity. As it pertains to this study, the biggest threats to external validity are Experimenter effect and the Hawthorne effect. The wrestlers in this study could have potentially felt the pressure to perform for the researcher since this was a convenience sample, they were aware of its purpose and may assume an expected outcome. Additionally, the Hawthorne effect states there is a tendency for participants to change their behavior simply because they know they are being studied. The wrestlers could inadvertently add more stress and anxiety on themselves due to knowingly being part of a study.

Connections to Previous Studies

There has been a plethora of research that has been conducted to determine stress-reducing techniques athletes can engage in for improved performance. The following studies were connected to the hypothesis and findings of this study. Gilbert, et.al. (2007) conducted a study to assess various sources of athlete stress and the strategies that coaches can use to help young athletes cope with it. The study was done with a competitive adolescent soccer team and its two coaches along with the review of the coaching and sports psychology literature. Through their findings, they developed coaching strategies that can help to alleviate athlete stress and may ultimately make participation in sports a more positive experience for both, the coaches, and

athletes. Similarly, this study was conducted to alleviate student-athletes' stress for a better overall experience.

Sorna's (2016) study was created to find what stress management technique is most effective specifically for swimmers prior to competition. Sorna's findings indicated no statistically significant differences between the two groups in either the techniques used, the frequency of the techniques used, or the usefulness of the techniques. This study was similar in it looked at which technique may improve the performance of the student-athletes.

Finally, Finnemore (2017) conducted a study to combat stress and its negative impact on psychological and physical health. The participants were student-athletes who were underrepresented, first-generation, and low-income students and aimed to increase understanding of the experiences of student-athletes in an Education Opportunity Program (EOP). The findings allowed for expanded research in this area and improved efforts by The College at Brockport EOP counselors to serve their student-athletes. This study helped the researcher consider the participants history, socioeconomic background and other factors that could affect the outcome of the study.

Implications for Future Research

Future research on discovering effective stress reduction methods prior to competition would continue the evolution of how athletes prepare mentally for optimal performance. Student-athletes have more stressors placed upon them than traditional students. Student-athletes' academic and physical demands combined with competition and individual background characteristics necessitate finding a way to alleviate their stress. This may prevent or reduce the number of former and current student-athletes who suffer from depression and other psychological disorders. Through years of experience, wrestlers who compete at a high level

have been determined to possess both physical abilities combined with mental toughness. In future research, the researchers should consider the skillfulness and/or aptitude of the participants. They also should consider pre-testing for mental toughness or creating sample groups consisting of athletes identified as struggling with pre-competition stress to get a true gauge on how effective the stress-reducing techniques are. This will allow future researchers to observe and record the changes in performance of the athletes and be able to conclusively attribute them to the stress reduction techniques without the threats to validity of this study.

Summary

In conclusion, the researcher was unable to reject the null hypothesis of this study. The findings of this study did not conclusively prove one stress-relieving technique is more effective than another in improving performance against high-level competition. Additional research will be required with adjustments to eliminate threats to validity and improved selection of sample group participants. This will expand the researcher's ability to determine the most effective stress-relieving techniques for each type of athlete given greater consideration to additional factors that could impact the study.

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