

Increasing Resilience in Athletes

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Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Education

December 2019

Goucher College
Graduate Programs in Education

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Abstract

The purpose of this study was to determine whether mental imagery training sessions could increase resilience in athletes. The tool used was a true or false survey called “Just How Mentally Tough Are You?” from Competitive Advantage, LLC. This study used a repeated measures design, involving the use of a pretest, intervention using mental imagery training, and a posttest with the same survey to determine whether the training created any difference in results. The results indicated a significant change in survey outcomes as a result of mental imagery training; the mean pretest and posttest scores showed a statistically significant improvement in the athletes’ self-reports of resilience, with the dependent samples t-test resulting in a $p < .05$

CHAPTER I

INTRODUCTION

Overview

Resilience is a necessary trait for competitive athletes to possess. The key component of resilience is defined as:

The presence of some or the entire collection of experimentally developed and inherent values, attitudes, emotions, cognitions, and behaviors that influence the way in which an individual approaches, responds to, and appraises both negatively and positively construed pressures, challenges, and adversities to consistently achieve his or her goals. (Gordon, 2012, p. 211)

The nature of competition is such that athletes are often exposed to highly stressful situations in which they are expected to perform at their highest ability. To do this, an athlete must be resilient and able to handle the challenges and stressors, turning their stress into adrenaline and ability to perform well. Research suggests that the psychological capacity to be resilient and persevere through adversity can account for some variances found in performance, outside of physical factors (Gucciardi, Peeling, & Ducker, 2014).

There are many factors that contribute to resilience, such as individual differences in personality regarding confidence, concentration, and emotional control. Cognitive strategies such as self-talk and goal setting, as well as personal dispositions, such as optimism, also factor into an athlete's resilience. Although researchers have not all agreed on a perfect definition for athletes' resilience, most do cite an athlete's ability to concentrate, rebound from failures, cope with pressure, and demonstrate confidence as common factors in resilience. Researchers also

state that coping with pressure and controlling anxiety before and during competition are important psychological skills for athletes (Kristjansdottir, Erlingsdottir, & Sveinsson, 2018).

Statement of the Problem

Studies show that successful athletes report higher levels of confidence and lower levels of anxiety and use more positive self-talk than their less successful counterparts in sports (Kristjansdottir et al., 2018), which highlights the importance of the presence of this trait in athletes. It is often believed that a coach can help to increase resilience through the way they handle and interact with their players. A coach can help create confidence in athletes, build an environment comfortable for learning and growing, and help athletes manage the stress of competition. Therefore, the purpose of this study was to determine ways to increase resilience in athletes with the goal of improving performance when under stress.

Hypothesis

The null hypothesis tested was as follows:

ho: There will be no impact on resilience as a result of mental imagery training.

ha: There will be an impact on resilience as a result of mental imagery training.

Operational Definitions

Resilience is defined by Webster's Online Dictionary as "an ability to recover from or adjust easily to misfortune or change" ("Resilience," 2019). Other key traits associated with resilience are perseverance and confidence. Webster's defines perseverance as "continued effort to do or achieve something despite difficulties, failure, or opposition," ("Perseverance,"

2019) and confidence as “a feeling or consciousness of one's powers or of reliance on one's circumstances”.

The method used to attempt to improve the resilience of athletes in this study will be mental imagery. Mental imagery can be defined as “an experience that mimics a real experience, where we are consciously aware of forming and seeing an image and can involve the use of our other senses” (Leslie-Toogood, Hammond, & Gregg, 2019, p. 2) and is said to be “a powerful tool that may be used in a variety of ways to help athletes do their best in training and competition” (Leslie-Toogood et al., 2019, p. 2).

CHAPTER II

REVIEW OF THE LITERATURE

The literature review examines resilience, how coaches and athletes can influence resilience of the athlete, and the factors and effects of an athlete's resilience. The first section discusses athletes' resilience as it is defined and explained, as well as its importance in sport performance. The second section discusses the ways resilience in athletes can be measured. The third section discusses strategies for enhancing resilience. The need for increasing resilience in athletes is extremely important because their mental state can greatly impact their consistency, performance, and ability to withstand the pressures and stressors of athletic challenges.

Athlete Resilience Defined

Athlete resilience has been a focus for sport researchers for almost a decade. The key component of this trait is “the presence of some or the entire collection of experimentally developed and inherent values, attitudes, emotions, cognitions, and behaviors that influence the way in which an individual approaches, responds to, and appraises both negatively and positively construed pressures, challenges, and adversities to consistently achieve his or her goals” (Gordon, 2012, p. 211). Over the past ten years, many definitions of resilience have been proposed and discussed in psychology research. Although the constructs vary, most definitions do incorporate two main conditions: “exposure to adversity or risk and the attainment of positive adaptation or competence” (Fletcher & Sarkar, 2013, p. 265).

Fletcher and Sarkar (2013) also state that there are many qualities and personality traits that influence the presence of resilience in athletes. Optimism, perseverance, self-control, self-efficacy, adaptability, and perceived social support are all qualities that are discussed with regard

to pieces of a resilient person, and as such are qualities that a consistently performing athlete possesses. The ability to adapt is seen as important because sports teams and athletes do not exist in static environments; rather, their situation, demands, and challenges are ever-changing, and they need to adapt in order to maintain consistent high performance. The research on athletic resilience thus far suggests that resilience and mental toughness “represents as a psychological capacity to deliver high performance on a regular basis despite varying degrees of situational demand” (Gucciardi et al., 2014, p. 81).

Gucciardi et al. (2014) reviewed studies of resilience and state that researchers have turned their focus to observable behaviors and actions that are often demonstrated in these demanding situations in order to examine the presence of resilience. They suggest that persistence, effort, and perseverance are often the behavioral signature of resilient athletes, and that pushing through challenges, refusing to quit, and sustaining high effort levels consistently over time are signs of an internal trait of resilience. Gucciardi et al. (2014) studied over three hundred athletes’ resilience using self-reports of mental states, hypothesizing that resilience and mental toughness would be positively associated with behavioral perseverance. The hypothesis was supported, suggesting that this psychological capacity accounted for part of the variance found in performance, outside of physical factors.

In another study of resilience and performance under pressure, Bell, Hardy, and Beattie (2013) studied young cricketers in a two-year longitudinal study. These researchers defined resilience as “the ability to achieve personal goals in the face of pressure from a wide range of different stressors” (p. 25). They viewed the measurement of resilience in a different way, in that they believed self-reports were irrelevant and that only behavior is an indicator of this trait.

It is important to note these varying views, as they contribute to a holistic view of resilience in athletes (Bell et al., 2013).

Personality and individual differences are noted as factors in resilience in research conducted by Kristjansdottir et al. (2018). They argue that successful performance is associated with multiple psychological and emotional states and attributes such as confidence, concentration, and emotional control. They discuss cognitive strategies such as self-talk and goal setting, and personal dispositions, such as optimism. These are all acknowledged in their research as factors relating to resilience in athletes. They also note that although researchers have been unable to agree completely on a definition for mental toughness and resilience, they do often agree and refer to an athletes' ability to concentrate, rebound from failures, cope with pressure, and demonstrate confidence as common factors in resilience. Kristjansdottir et al. state that coping with pressure and controlling anxiety before and during competition are important psychological skills for athletes. They note that a high level of anxiety revolving around competition can have a considerable impact on athlete performance, in a negative relationship. These researchers used a Sports Mental Toughness Questionnaire and a Sports Anxiety Scale questionnaire to measure confidence, constancy, control, worry, somatic anxiety, and concentration disruption. They utilize these factors as a measure for overall resilience in athletes (Kristjansdottir et al., 2018).

The importance of resilience is discussed in numerous research and studies on the topic in regards to athletics. This trait is central for reducing potentially damaging effects of stressors and is considered pertinent for many aspects of athletic experiences, like injuries, controlling coaches, or other stressors that can inhibit human functioning (Gucciardi, Stamatis, & Ntoumanis, 2017). Kristjansdottir et al. (2018) point out that several studies on the topic show

that successful athletes report higher levels of confidence and lower levels of anxiety and use more positive self-talk than their less successful counterparts in sport; this outlines the importance of these factors that contribute to resilience in athletes.

The goal of athletes is arguably universal: to perform at their highest ability, with the least negative anxiety, through the varying challenges and adversity that they face. Resilience is important to the achievement of these goals because it allows athletes to face these challenges with optimism and toughness. Optimism is seen as an important trait of an athlete because using an optimism explanatory style in rebounding from failures could lead to heightened protection against adversity, whereas pessimism could lead to intensifying the consequences of failure and therefore increasing anxiety (Martin-Krumm, Sarazzin, Peterson, & Famose, 2003).

In sum, Fletcher and Sarkar (2013) state that psychological resilience in sport is important because athletes are constantly exposed to a wide range of pressures and must withstand this stress in order to sustain high performance. Lizmore, Dunn, and Dunn (2017) refer to a quote from Michael Jordan in which he outlines how many times he failed in big moments in his athletic career and credits his successes to his ability to bounce back from those failures. They relate this to their research by stating that mistakes are a part of any sporting experience and that a successful athletic career is founded on an athletes' ability to respond constructively to adversity (Lizmore et al., 2017).

Measuring Resilience

Resilience is an internal trait that is displayed by behavior and actions. It has been measured in various ways, including self-reports of internal traits and mentality as well as evaluation of performance, behavior, and actions relating to resilience. Fletcher and Sarkar (2013) state that it is important to measure circumstances related to resilience in order to measure

resilience itself. These circumstances include adversity the athlete is facing, positive adaptation to the resilience, and protective factors, which are habits individuals use to protect themselves from stressors they encounter. These three factors need to be assessed in order to provide a complete picture of an athletes' resilience. Fletcher and Sarkar state that researchers need to assess protective factors, review these factors in the context of sport performance, utilize a longitudinal design for their studies, and examine the relationship between stressors and protective factors.

The study of athletes completed by Guicciardi et al. (2014) utilized a questionnaire for measuring. The athletes, Australian football players, self-reported their mental state with regard to resilience. The questionnaire included categories for self-efficacy, optimism, and emotional regulation. The athletes' physical features, such as height and weight, were also measured, and then they were all put through physical testing to examine their performance (Guicciardi et al., 2014). This study was designed to measure their performance as related to their resilience, without ruling out the physical factors that may influence performance.

In Bell et al.'s (2013) study of young cricketers, resilience was measured through observation of athletes rather than self-reports. An inventory used contained eight items that focused on the athletes' abilities to deal with typical competition stressors, such as opponents using aggression, and a coach observed the athletes' ability to perform under those varying stressful circumstances. The coach reported on behavior and actions of the athlete as well as on tangible performance measures, such as total runs scored and batting average, as the form of measurement. These measures were used prior to and after intervention (Bell et al., 2013).

A study on development of mental, emotional, and bodily toughness also utilized a questionnaire in order to measure the presence of toughness in athletes. The researchers

developed a list of 93 items, ranging across the mentioned categories of toughness. Athletes were also asked to rate their own mental toughness on a scale of 1-20, after having mental toughness explained to them as the ability to perform consistently, close to their highest standard, regardless of the circumstances (Mack & Ragan, 2008).

Overall, the measurement of resilience appears most often as questionnaires and surveys submitted by the athletes.

Strategies for Enhancing Resilience

One factor that contributes to resilience is the way a coach handles and interacts with players. Optimal performance can be encouraged through the satisfaction of the psychological needs of autonomy, competence, and relatedness or feeling connected to others. Social environments, with key contributing agents such as coaches, have an impact on the satisfaction of these three needs. Coaches, being in a position of authority, can either undermine or support these psychological needs, and this will be a contributing factor to an athlete's level of resilience. Specifically, coaches can thwart these needs by being overly controlling, using the controlling use of rewards, withholding attention and support, intimidating athletes, and imposing strict boundaries on them. These styles of coaching have been linked with maladaptive outcomes of resilience, like burnout, stress, and low achievement (Gucciardi et al., 2017). Players with higher levels of resilience can likely avoid the effects of such coaching styles more easily, but enhancing resilience can also be accomplished through a coaching style that is more supportive of the psychological needs of the athlete.

Bell et al. (2013) evaluated the effectiveness of a resilience intervention. The intervention was conducted with a group of young, elite cricketers, with the goal of enhancing their resilience.

The participants were tested for levels of resilience, both through survey and performance evaluation. Then they were taught through intervention various methods of coping with threats and stressors. The resilience training program explained to players that consequences are a fundamental aspect of sport training, and it offered strategies for dealing with the threat of possible consequences and performing highly regardless of those threats. The staff involved in this intervention also repeatedly reinforced the possible positive outcomes of the athletes' cricket training, expressed belief in the players, and took on a position as role model for appropriate athletic behavior in times of adversity and stress. Meetings were held at the end of every practice to review and discuss feedback. The intervention also included days where participants would practice in an environment without any perceived threat, to experiment with their progressing skills without any fear of punishment (Bell et al., 2013).

Another approach to enhancing resilience is a strength-based approach to coaching. Gordon (2012) states that a strength is something an athlete is good at and is also passionate about. Strengths-based coaching includes identifying and then exploiting an athlete's mental strengths to enhance performance. Gordon writes that research shows that athletes who focus on building up their strengths are more confident, more likely to achieve goals, experience less stress, are more resilient, and perform better. Gordon states that whatever traits a person focuses on becomes their reality. It stands to reason, then, that athletes focusing on strengths will begin to see themselves as strong and resilient in competition.

Researchers also touch on increasing team resilience, which can be helpful in finding ways to enhance resilience of individual athletes as well. Morgan, Fletcher, and Sarkar (2017) state that because teams do not exist in a static environment, development of resilience should occur throughout a team's stages and in the context of specific stressors that they face naturally.

Morgan et al. state that teams should develop a plan together that outlines acceptable and agreed upon team resilience actions and behaviors that the team will utilize when stressors are present.

Conclusion

There are various ways that have been shown to help increase resilience in athletes. Studies have also shown that mental toughness and developing resilience are crucial in sports to withstand the pressures and stressors of being in a highly competitive environment.

CHAPTER III

METHODS

Design

This study was conducted to determine whether a mental imagery intervention would increase resilience in athletes. The design that was used in this study was a repeated measures design that utilized a pretest and posttest to assess changes in resilience. Data were initially collected using a true or false survey, designed by Competitive Advantage, LLC. This was followed by six weeks of weekly mental imagery training sessions with the group. Following the six weeks, data were again collected using the true or false survey to determine if there was an increase in resilience. A dependent samples t-test was conducted to gauge what impact, if any, the imagery had on the players' resilience.

Participants

For this study, participants consisted of 12 female student-athletes from the field hockey team at a small liberal arts school in Towson, Maryland. Participants ranged in age from 18-21 and represented the entire team of that season.

Instrument

Information was collected using a true or false survey on mental toughness and resilience entitled "Just How Mentally Tough Are You?" designed by Competitive Advantage, LLC. The survey consists of 30 true or false questions and takes approximately five minutes to complete. The results are shown in an evaluation section that is meant to determine mental strengths and weaknesses of the athlete. A copy of this survey is located in the appendix.

Procedure

The researcher met with the head coach of the women's field hockey team at the college to present the project and obtain approval to work with the team. The head coach approved the use of the survey as pretest, intervention using mental imagery training, and administering the survey again as the posttest. Following this approval, the researcher took the following course of action.

The initial survey was sent via email to the 12 student-athletes participating during the spring season. The researcher informed the athletes that their participation was voluntary, and that their results would not be shared with the rest of the team. The researcher requested that all those willing to participate then take the survey and email the results link to the researcher. The researcher also informed the athletes that this pretest would be followed by six weeks of mental imagery training in an attempt to increase the athletes' resilience. The mental imagery training took place once a week with each individual athlete. The researcher met with the individuals and utilized mental imagery scripts to walk through high-pressure situations, game-day routines and normal occurrences, game situations the athlete could find themselves in, and stressful situations or occurrences of errors and mistakes to encourage the athlete to visualize moving past mistakes and overcoming mental weaknesses to continue to perform well. The researcher then followed up with a posttest of the same true or false. Information from the pretest and posttest were gathered, compared, and analyzed to assess any changes in resilience.

CHAPTER IV

RESULTS

This study examined the resilience of 12 female student-athletes on a collegiate field hockey team and whether mental imagery training could increase their resilience, based on a scores true or false survey developed by Competitive Advantage, LLC focusing on mental toughness and resilience. Players were asked to take this survey prior to mental imagery training as the pretest, and then take the survey again as a posttest after a six-week period of weekly individual meetings that included mental imagery training focused on increasing mental toughness in the athletes. A dependent samples t test was conducted to gauge what impact, if any, the imagery had on the players' resilience. Summaries of the results and outcomes as they relate to the study's hypothesis can be found below.

Each student-athlete was scored on a scale of 1 to 30 based on the survey's rating scale for mental toughness. The results of the pretest were as follows.

Mean score of mental toughness across 12 student-athletes on pretest: 21.85

The results of the posttest were as follows.

Mean score of mental toughness across 12 student-athletes on posttest: 22.16

Table 1 below shows a summary of the results.

Table 1

Summary of Data

Mean Score on Pretest	21.85
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Mean Score on Posttest	22.16
Number of Student-Athletes with Score Changes from Pretest to Posttest	7 (out of 12)
Number of Student-Athletes with Score Increases from Pretest to Posttest	6 (out of 12)
Mean Point Increase from Pretest to Posttest of the 6 Student-Athletes with Score Increases	2.67
Mean Score Increase from Pretest to Posttest of the 12 Student-Athlete Participants	.58

Table 2 shows the individual pretest and posttest scores for all 12 athletes. Each individual athletes' score on the pretest and posttest are shown, as well as the difference between each pretest and posttest score. The "Difference" column also notates whether the change was an increase or decrease in their score.

Table 2

Individual Scores on Pretest and Posttest

Athlete	Pretest	Posttest	Difference
1	22	23	1
2	14	16	2
3	22	23	1
4	22	22	0
5	14	15	1
6	27	27	0
7	21	21	0
8	20	21	1
9	24	24	0
10	30	30	0
11	25	24	-1
12	18	20	2

A dependent samples t-test analysis was run to determine if there were significant differences in pretest and posttest scores on the "Just How Mentally Tough Are You?" true or

false survey for the female field hockey players. Table 3 shows that in this study, there was a significance between the pretest and posttest scores of the field hockey players on the “Just How Mentally Tough Are You?” survey. On the pretest, the mean survey score was 21.58, which increased to 22.17 on the posttest. The significance level for field hockey players is $p < .05$ at .046, and therefore the null hypothesis is rejected.

Table 3

Dependent Group T-Test of Female Field Hockey Players

Group Name	N	Average Score	SD	t	Df	p
Pretest	12	21.58	4.76	-2.244	11	.046
Posttest	12	22.17	4.15			

The results in the table above will be analyzed and discussed in Chapter V.

CHAPTER V

DISCUSSION

The purpose of this research was to determine whether mental imagery training could increase resilience of 12 female collegiate student-athletes. The researcher utilized an existing true or false survey developed by Competitive Advantage, LLC, consisting of 30 questions related to an athletes' confidence, ability to perform under pressure, ability to rebound from mistakes, and motivation. Resilience was defined as:

The presence of some or the entire collection of experimentally developed and inherent values, attitudes, emotions, cognitions, and behaviors that influence the way in which an individual approaches, responds to, and appraises both negatively and positively construed pressures, challenges, and adversities to consistently achieve his or her goals. (Gordon, 2012, p. 211).

Resilience is a vital characteristic of athletes expected to perform at high levels under stress. An athlete can be successful, composed, and execute well in practice, and be unable to replicate that performance come game time in high pressure situations- which is the nature of competition that collegiate athletes are expected to perform in. An athlete must be resilient and able to handle the challenges and stressors, turning their stress into adrenaline and ability to perform well under pressure. Research suggests that the psychological capacity to be resilient and persevere through adversity can account for some variances found in performance, outside of physical factors (Gucciardi et al., 2014).

Mental imagery was used as the strategy here in order to facilitate athletes' visualization of a high pressure situation in which they are trained to see themselves succeeding. This was

meant to mentally create the situation and feelings associated with high pressure situations in competition, and allow the athletes to visualize themselves executing skills and succeeding on the field in those high pressure situations.

The mean score on the pretest of 21.58 (out of 30) falls in the range described by Competitive Advantage, LLC as athletes who need to put more time into mental toughness training. These results suggested that the team was overall struggling in the mental toughness area. After the six-week period of weekly individual mental imagery training, the results of the posttest produced a mean score of 22.17, showing an increase of 0.59 in the mean score of the 12 athletes. Overall, seven of the 12 athletes' scores changed from pretest to posttest results. Of these seven score changes, six of them were score increases rather than decreases. Of the six score increases, the average point increase was 2.67. Overall, for all 12 student-athletes, the average increase of score was .58 points. Therefore, in this study, the mental imagery training worked and the null hypothesis was rejected.

Implications of Findings

Results of this action research can inform coaches that mental imagery can be a successful method with regards to increasing resilience in female collegiate student-athletes. There was a statistically significant change in the results from the pretest to the posttest, suggesting that the resilience of the athletes had been positively impacted through the mental imagery training. It would be useful to utilize the implication of these findings to expand the research to larger groups of athletes, and over a longer period of time, in order to see even more significant results of the mental imagery training. Overall, it seems that mental imagery training

should be used routinely with athletes to increase their resilience over a period of time in order to perform successfully under pressure.

Theoretical Consequences

Fletcher and Sarkar (2013) state that psychological resilience in sport is important because athletes are constantly exposed to a wide range of pressures and must withstand this stress in order to sustain high performance. Kristjansdottir et al. (2018) discuss that successful performance is associated with multiple psychological states such as confidence, concentration, and emotional control. They discuss cognitive strategies such as self-talk and goal setting, which are all acknowledged in their research as factors relating to resilience in athletes. The scores on the pretest and posttest almost all being in the range that is described as athletes who need to focus more on improving their resilience supports these theories that resilience is an important trait when considering athletic performance. This research supports prior literature that “a substantial amount of research has examined the relationship between mental imagery and sport performance; indicating that imagery can improve the physical performance of sport skills” (Leslie-Toogood et al., 2019, p. 2).

Threats to Validity

Several threats to validity of the research exist. One external threat was the small sample size. Because of the size of the current team, and the fact that the research was taking place in the off-season, the team is very small due to study abroad students being unavailable and senior students no longer considered a part of the team. Another external threat to validity could be the point in the team training at which the pretest and posttest were administered. The pretest was administered at a time when spring training was about to begin, whereas the posttest was administered after spring training. This could influence the perspective athletes have on their

own play and their mentality. An internal threat that exists was that because the researcher was an assistant coach for the student-athletes participating in the survey, they may have had a difficult time providing truthful responses for fear of judgment or different treatment from coaches. Also, because all of the athletes participating were part of the same collegiate program, they are likely to have been subject to the same circumstances and experiences, which could contribute to their mental abilities, such as resilience.

Connections to Previous Studies

Other studies aimed at increasing resilience in athletes took some similar approaches to this research. The study by Gucciardi et al. (2014) also utilized a questionnaire style approach, where Australian football players self-reported their mental state with regard to resilience. Gucciardi et al.'s (2014) research differed from mine in that he worked with over 300 athletes, a much larger participation group than the current 12 athlete study. The results for Gucciardi et al.'s (2014) study showed that resilience did account for part of the variance found in performance of the athletes. This was a bit different than the current study, in that he was determining whether resilience was a factor in performance, whereas the researcher was determining if mental imagery could increase resilience. Using a slightly different approach, Bell et al. (2013) evaluated the effectiveness of a resilience intervention by working with young, elite cricketers, with the goal of enhancing their resilience. The study included a test of levels of resilience using coach surveys about the athletes rather than self-reports, as well as performance evaluation, and then the athletes were taught through intervention various coping mechanisms for dealing with stressors during training and performance. The athletes' resilience was then measured again after the intervention period. Bell et al.'s study was similar to this current research based on a pretest, intervention, and posttest, but differed in the intervention style in that

they included teaching coping mechanisms and positive reinforcement for the athlete, rather than mental imagery training to teach the athlete how to visualize success. Bell et al. were also testing youth athletes younger than my college aged participants, and a co-ed group of athletes, whereas my athletes were all female. Bell et al.'s results did show significant improvements to the athletes' mental states, resilience, and performance, just as the current study results showed a statistically significant difference between the pretest and posttest scores.

Future Research

Future research should be conducted on the topic of athlete resilience, and on the task of increasing athlete resilience. One way future research could differ would be utilizing an intervention period longer than six weeks and holding sessions more frequently than once a week. The sessions could also be held with a researcher other than the coach of the team, which could cause threats to validity and lack of honesty in feedback and responses during the pretest, intervention, and posttest due to the nature of the relationship. It would also be worthwhile to utilize a wider variety of athletes across multiple programs at the collegiate level, which could alleviate the chance that these athletes have all been through similar experiences throughout their college experience that has caused lasting effects on their resilience. Another layer that could be added to future studies is determining if resilience truly impacted the level of play and success of the athletes' performance on the field.

Conclusion

This study was conducted to determine whether mental imagery training would be an effective intervention for increasing mental resilience in female student-athletes, utilizing a sample size of 12 athletes. The hypothesis that there would be an impact on resilience as a result

of mental imagery training was retained; the null hypothesis was rejected which hypothesized that there would be no impact on resilience as a result of mental imagery training. There was a significant difference between the pretest mean score and the posttest mean score, indicating that the mental imagery training did make a significant impact on the mental resilience of the athletes participating.

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Appendix

JUST HOW MENTALLY TOUGH ARE YOU?

Take a few moments to fill out this questionnaire that covers several component skills of mental toughness. When you're finished, check your answers in the evaluation section that follows to determine your mental strengths and weaknesses:

I frequently worry about mistakes.

- True
- False

I get really down on myself during performance when I mess up.

- True
- False

It's easy for me to let go of my mistakes.

- True
- False

If I start out badly, it's hard for me to turn my performance around.

- True
- False

I get distracted by what the coach thinks whenever I screw up.

- True
- False

I bounce back quickly from setbacks, bad breaks and mistakes.

- True
- False

I do my best when there's more pressure on me.

- True
- False

I get too nervous to really perform to my potential.

- True
- False

I do better in practice than I do when it really counts the most.

- True
- False

I tend to get easily psyched out or intimidated.

- True
- False

I can keep myself calm and composed under pressure.

- True
- False

I don't want the ball/dread competing at "crunch time." (big game/race).

- True
- False

The coach's yelling knocks me off my game.

- True
- False

I tend to get easily distracted.

- True
- False

Certain opponents can get into my head and throw me off my game.

- True
- False

Lousy playing conditions (weather, field conditions, temperature, etc.) negatively affect me.

- True
- False

I have no trouble focusing on what's important and blocking everything else out.

- True
- False

I think too much about what could go wrong right before and during performance, (the "what if's").

- True
- False

One or two failures do not shake my confidence.

- True
- False

I tend to compare myself too much with teammates and opponents.

- True
- False

I'd rather compete against a better opponent and lose than go up against a weaker opponent and win.

- True
- False

I am a confident and self-assured athlete.

- True
- False

I tend to be too negative.

- True
- False

I have trouble dealing with negative self-talk (thoughts).

- True
- False

I get more motivated after failures and setbacks.

- True
- False

It's easy for me to consistently train at a high level of intensity.

- True
- False

I think about how today's practice will help me get to my goals.

- True
- False

I find myself just going through the motions a lot in practice.

- True
- False

I have clear goals that are important for me to achieve.

- True
- False

I am a highly motivated athlete.

- True
- False