Imagery Interventions: Imagery Scripts for Athletes Recovering from ACL Injury

A graduate project submitted in partial fulfillment of the requirements

For the degree of Masters of Science in Kinesiology

By

Habib Toubedjian

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DEDICATION

I would like to dedicate this project to both my parents for all the sacrifices they have made, for my sister for always being an ear and support system and most of all for my brother for putting his life on hold so I can continue my education. I hope I have made you all proud. Thank you all.
The graduate project of Habib Toubedjian is approved:

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Dr. Paula Thomson

Date

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Dr. Ashley Samson

Date

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Dr. Jacob Jensen, Chair

Date

California State University Northridge
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ABSTRACT

Imagery Interventions: Imagery Scripts for Athletes Recovering from ACL Injury

By

Habib Toubedjian

Master of Science in Kinesiology

The object of this project was to help bridge the gap between the knowledge of psychological intervention techniques and the practice of these techniques during the rehabilitation process for post anterior cruciate ligament ACL surgical recovery patients. The use of psychological intervention techniques have been widely used in sports performance and pain management in hospital settings. Athletic Trainers (AT) have traditionally worked predominantly on the physical aspect of injuries while the psychological aspect has not been given as much attention. The design of this project included six imagery sessions for three female athletes recovering from ACL reconstruction surgery to help decrease the psychological impact of an injury. Feedback was collected from each athlete relating to their biggest
psychological concern or need which was then included in each imagery session. The project presented each athlete with an imagery session specifically geared to their needs. Each athlete was picked from a division one athletics program sports medicine clinic. Findings showed athletes felt more relaxed and comfortable after their imagery session based off their feedback.
CHAPTER 1: INTRODUCTION

Athletic Trainers (ATs) are certified health care professionals that practice in the field of sports medicine. ATs treat the bodies of injured athletes while developing insight into their minds; simultaneously athletes develop reliance on their ATs. They treat the bodies of injured athletes, but, in so doing, they also develop insight into the minds of those athletes. Athletes also develop a certain reliance on their ATs (Tracey, 2003, p. 290). A study of division three level athletes showed that often injured athletes spoke to their AT regarding their injury before expressing their emotional state. These athletes did not answer any questions about how they were feeling on a given day until they had spoken to their AT (Tracey, 2003, p. 290). Many of the athletes paid close attention to the AT’s facial expression and based their emotional response on that (Tracey, 2003, p. 284). The study displays the strong relationship an athlete has with their AT and the impact of what the AT does has a tremendous influence on the athlete. Responses to injury have played a major role in the response of the athlete in a behavioral and emotional way, both which can affect rehabilitation outcome and adherence (Cupal & Brewer, 2001, p. 29). Indications show that approximately five to thirteen percent of athletes that are injured experience meaningful levels of psychological distress (Cupal & Brewer, 2001, p. 29). This outlines the importance of addressing the psychological aspect of injury recovery.

This relationship is further complicated by the fact that ATs know that the psychological aspects of injury rehabilitation can have great bearing on an athlete’s recovery. However, most athletes unfortunately do not have access to a certified sport psychology consultant and AT’s often perceive themselves as not fully trained in implementing the psychological intervention techniques that could be used to treat this side of injury recovery (Clement, Granquist, & Arvinen-Barrow, 2013, p. 513). As a result, most of the focus in the field of athletic training has
been on the physical component of treatment; the psychological aspect has often been ignored (Law, Dredger, Hall, & Forwell, 2006 p. 10).

This is a major finding because studies have shown that the use of psychological intervention techniques can help enhance the rehabilitation process. Treating the mind as well as the body of an injured athlete improves their recovery, therefore implementation of psychological intervention techniques can result in shorter return-to-play times and in more satisfied athletes. For the small population of injured athletes that use psychological intervention techniques, research shows that the most common techniques used are goal-setting, imagery, relaxation, and stress management (Reese Pittsinger, & Yang., 2012, p. 72). Studies show that these psychosocial techniques have been successful in shortening recovery time and in assisting athletes in returning to play sooner (Reese Pittsinger, & Yang., 2012, p. 72). In addition athletes that utilize goal-setting, guided imagery, or relaxation tend to be associated with less negative psychological consequences, reduced re-injury anxiety and better coping (Reese et al., 2012, p. 76). This can lead to a full approach in athlete recovery and help facilitate the use of psychological intervention techniques during the rehabilitation process.

The purpose of this project was to take these psychological intervention techniques and incorporate them using an audio based format. This allowed for ease of access and was not limited to just the time that the AT had with an athlete. These psychological intervention techniques were incorporated into an imagery script that was geared towards the rehabilitation of ACL reconstruction surgery. The project as a whole included six imagery scripts that include different aspects of anxiety reduction, motivation, and pain reduction. The scripts also included goals an AT will normally want to accomplish at certain times of the recovery process for ACL. The imagery scripts were also easily transferable from emails to phones or portable listening
devices. This is helpful to those athletes that do not have access to a certified sport psychology consultant or do not feel comfortable going to one. Despite the knowledge gained from studies that have shown the influence that injuries have on an athlete’s psychological state and from studies that have shown the value in utilizing psychological intervention techniques, little application of these findings have been utilized in creating intervention strategies for injured athletes. The development and implementation of a psychologically based audio intervention that guides injured athletes through psychological intervention techniques can provide a means of improving the psychological factors that are important to the recovery process.

The purpose of this project and the use of these imagery audio scripts were to help athletes recovering from ACL reconstruction surgery and to better cope with injury. The imagery session resulted in the athletes being more satisfied with their rehabilitation. This project also shows AT’s an example of a tool they can use in helping athletes learn about the importance of the psychological aspects of recovery. In addition the audio format for this program makes it more accessible to both AT’s and athletes.
CHAPTER 2: LITERATURE REVIEW

Response to Injury

The effect that an injury has on an athlete goes beyond the physical. When athletes are injured, their responses come in the form of cognitive, affective, and behavioral outcomes. Injuries can bring on fear, confusion, anger, and frustration (Wierike, van der Sluis, van den Akker-Scheek, Elferink-Gemser, & Visscher, 2012, p. 527-536). Beyond these emotional effects, injuries also can affect an athlete’s sense of identity since a majority of athletes see their identity defined by their role as an athlete (Green & Weinberg, 2001, p. 44). All of this leads to an increased likelihood of negative psychological reactions to injury.

Studies have shown the negative toll that injuries take on the self-esteem of athletes, much of the negative aspects occur at the beginning stages of an injury (Tracey, 2003, p. 280). In a study that evaluated self-esteem in runners, runners who were injured for at least a two-week period rated their self-esteem significantly lower than runners who were not injured (Chan & Grossman, 1988, p. 880). Another study compared self-esteem in sixteen football players who were injured to thirteen football players who were not injured and found higher levels of self-efficacy in the non-injured athletes (Wiese-bjornstal Smith, Shaffer, & Morrey, 1998, p. 51).

Likewise, when pre and post injured athletes were examined on their self-efficacy, there was a big loss of their self-efficacy as a result of injury. Self-efficacy is the belief in oneself as effective and competent in certain situations (Wiese-Bjornstal et al., 1998, p. 51). Perceived self-efficacy is the belief that one can perform a given task based on strength and skill level. Self-efficacy expectations affect behavior and success (Sonstrom & Morgan, 1989, p. 332). Wiese-bjornstal et al (1998) found that this loss of self-efficacy and self-worth can lead to depression
Approximately ten to twenty percent of athletes experience depression after becoming injured (Wiese-bjornstal et al., 1998, p. 58).

Taking into account the serious, negative psychological effects that arise in athletes after they are injured, many researchers have noted that an athlete’s response to an injury is very similar to the response of the death of a loved one (Reese, Pittsinger, & Yang, 2012; Tracey, 2003, Green & Weinberg, 2011). Injured athletes can often experience denial, anger, bargaining, depression, and, finally, acceptance. One study showed three subjects tried to downplay the severity of their injuries. This illustrates the first step of denial (Tracey, 2003, p. 284). Other studies found that athletes will then often experience fear, anxiety, confusion, anger, frustration, depression, and decreased self-esteem (Reese, Pittsinger, & Yang, 2012; Tracey, 2003). In addition, research showed that fear of re-injury resulted in some athletes failing to return to their sport (Wierike et al, 2012, p. 536).

With some athletes not returning to their sport all together, there are other athletes that try to cope with their injuries in a variety of ways. Coping occurs when behavioral changes and cognitive effort are applied in an attempt to control specific internal or external demands that are perceived as exceeding the resources of the person (Carson & Polman, 2008, p. 235). One form of coping is approach-oriented. Approach-oriented coping is a concentrated effort in managing a stressful situation, usually by planning, using goal-setting or positive thoughts. Studies show that approach-oriented coping refers to concentrated efforts to control a stressful situation through techniques such as goal-setting and positive interpretation (Carson & Polman, 2008, p. 235). Another form of coping is avoidance-oriented, which concentrates on distractions as a form of avoiding the situation. Studies show that avoidance-oriented coping leads athletes to focus their concern on activities that are not related to their injury (Carson & Polman, 2008, p. 235).
Although avoidance-coping can be helpful in the early stages of injury recovery, in the long run it can have negative effects such as too much divergence from normal lifestyle (Wierike et al., 2012, p. 538). As such, avoidance-coping is often viewed as a negative approach to handling a stressful situation. Avoidance-coping carries this negative stigma because some athletes avoid dealing with their injury status by seeking out unproductive distractions, blocking out the idea altogether, or by walking away from the difficult situation. Some athletes have stopped competing in their sport as a result of avoidance-coping (Carson & Polman, 2008, p.236). Even if the athlete participates in the injury rehabilitation process, avoidance-coping may complicate the recovery if it causes a lack of compliance from the athlete. As a result, avoidance-coping and non-active coping techniques can result in ineffective rehabilitation or in a longer rehabilitation process (Albinson & Petrie, 2003, p. 308).

There are still many psychological intervention techniques that can be utilized to help injured athletes cope with some of the negative psychological effects that arise in the post-injury period. Some of these techniques are; imagery, deep-breathing, goal-setting, and self-talk. All of these techniques have been proven in different settings and have been shown to help athletes deal with pain and the stressors of competition. These techniques can be incorporated into the rehabilitation process and may help athletes to recovery quicker.

**Imagery**

Imagery is defined as “the process of imagining the performance of a skill with no related overt actions” (Reese, Pittsinger, & Yang, 2012, p. 77). Imagery has been used to help patients with managing pain and to help athletes improve performance. Imagining the successful completion of a task without physically completing the task increases a person’s ability to be
prepared and successful when it comes time to actually perform the task (Reese et al., 2012, p. 77).

One study regarding the use of imagery as a psychological intervention coping tool in patient care showed that the use of imagery techniques reduced stress, blood pressure, depression, the length of hospital stay, and postoperative pain (Scherwitz, Mchenry, & Herrero, 2005, p. 69). Relaxation and stress reduction were rated as the highest benefits derived from the use of imagery. Patients also acknowledged that the use of imagery led to having an increased positive outlook as well as helped with the physical symptoms. At least half of the subjects recorded moderate-to-definite benefits in the reduction of psychological symptoms such as depression and anxiety because of interactive guided imagery (Scherwitz et al., 2005. pp. 75-77).

The subjects in this study represented a wide variety of patients, but the conclusion showed that age, gender, and education level did not have a bearing on whether or not a patient benefitted from imagery (Scherwitz et al., 2005, p. 78).

Other studies regarding the use of various types of imagery techniques in patient care also found the same positive results. In a study done by Sordoni and Forwell 2002, they found that healing-imagery was employed more than motivational and cognitive-imagery in patient care (Law et al., 2006., 2002, p. 11). Another study showed that when interactive-guided imagery was used with hospital patients, the patients understood their problem more after an imagery session, which led to increased positive self-efficacy (Law et al., 2006, p. 11). In addition, Law et al. (2006), in referencing Syrjala (1995), stated that positive outcomes were found with the use of relaxation and imagery techniques in cancer patients. They found that a group using relaxation and imagery had a greater reduction in pain than a group that was receiving just traditional
medical treatment (p. 11). The reduction in pain in the rehabilitation setting can lead to better compliance by the athlete and faster advancements in rehabilitation.

These positive outcomes also were found in studies where the patients were athletes who were recovering from injuries. A 24-week post-test in one study showed that athletes who used relaxation guided imagery during their recovery from anterior cruciate ligament surgery experienced 62% less re-injury anxiety, 35% greater knee strength, and 76% less pain as opposed to a placebo group that did not use relaxation and guided imagery (Cupal & Brewer, 2001, p. 35). Another study that included the use of pain management imagery found that a group that used pain management imagery was significantly more satisfied with their rehabilitation experiences, as opposed to a group that did not use any pain management imagery (Law et al., 2006, p. 13). In addition, athletes correlated the effectiveness of their use of imagery for pain management with their satisfaction with rehabilitation (Law et al., 2006, p. 13). This in turn can lead to a more compliant and satisfied athlete.

Imagery has shown to generate positive outcomes, but others argue the successful use of imagery stems from applying the proper imagery techniques in a given situation. A study was conducted in which 52 male students who were asked to use imagery and then were tested in a muscular endurance task. The researchers wanted to see if the content of the mental imagery affected the relationship between performance and imagery and if the content of the mental imagery had a bearing on increasing performance. They found that task-relevant imagery, imagery associated with the task at hand, was more effective than task-irrelevant, or non-specific, imagery (Lee, 1990, p. 70).
This finding concurs with the fact that there are multiple types of imagery utilized for specific purposes in enhancing sports performance. The four main types of imageries are; motivational specific imagery, motivational general imagery, cognitive specific imagery, and lastly cognitive general imagery. Motivational specific imagery involves visualizing the gaining of a prize - seeing oneself hoisting a trophy or winning a medal. Motivational general imagery deals with visualizing the physiological arousal and affects that come from various sport situations. Cognitive specific imagery uses visualization for the rehearsal of specific skill. And cognitive general imagery is for the rehearsal of specific sport plays (Law et al., 2006, p. 10).

There are also multiple imagery theories that help explain how imagery could benefit the rehabilitation of athletes. One such theory is the psychoneuromuscular theory which explains that imagery can facilitate motor skill learning because of the neuromuscular activity patterns imagery activates (Weinberg & Gould, 2011, p. 301). Another imagery theory is the symbolic learning theory which states, imagery can function as a way of helping athletes understand the pattern needed to accomplish the task at hand by using an internal coding system (Weinberg & Gould, 2011, p. 301).

Although all of these studies were done in the hospital setting and in terms of enhancing sports performance, the outcomes can be transferred to rehabilitation. Since rehabilitation is a combination of pain management and sports performance and imagery has been proven successful for both these settings, this leads to imagery being a useful psychological intervention technique that can be utilized injured athletes as they progress through the various stages of their injury recovering program.
Deep-Breathing

Deep-breathing is another form of relaxation that can help an athlete to cope with the complexities of injury recovery during the rehabilitation process. The physical act of having the athlete engage in deep-breathing - including breathing through the diaphragm instead of the lungs - has been linked with refocusing the athlete’s attention on the challenge at hand instead of on thinking about the larger task. Deep-breathing also lowers blood pressure and heart rate. Furthermore, deep-breathing relaxation techniques help with the psychological factors of recovery since they have been correlated with decreased levels of anger, frustration, and depression in athletes with severe injuries (Reese et al., 2012, p. 71). Since stress management has been shown to play an important factor in injury recovery (Ievlena & Orlick, 1991, p. 26), deep-breathing’s ability to help athletes to focus and to manage stress makes it a crucial psychosocial tool for aiding in effective injury recovery.

Goal-Setting

Goal-setting also has been shown to help athletes during their rehabilitation process. For goal-setting to work as a psychosocial tool during the injury recovery process, the athlete must accept the goals and receive proper feedback regarding the goals (Locke & Latham, 1985, p. 205). So that the athlete can take them seriously, goals for the rehabilitation process must be specific and challenging rather than vague and easy. They also need to be measurable. In addition, there needs to be a combination of both short-term and long-term goals as part of the recovery process (Locke & Latham, 1985, p. 205). In this way, goal-setting will affect performance by affecting the direction of attention, strategy development, effort and persistence.
Effective goal-setting also helps in maintaining the athlete’s sense of self-confidence and self-efficacy. This occurs when athletes accomplish their set goals (Reese et al., 2012, p. 77). Having the athletes set their own specific goals and then having them work to accomplish these goals gives the athletes a clear sense of direction and focus. This makes goal-setting an effective psychosocial tool during the injury recovery process. Goal-setting can also help with compliance during the rehabilitation process. If non-compliance is due to lack of motivation or depression, goal-setting can help with adherence to the rehabilitation plan because of the encouragement athletes receive from accomplishing goals (Granquist, Hamson-Utley, Kenow, & Stiller-Ostrowski, 2015, p. 235).

Self-Talk

Self-talk is the “the process of influencing oneself to establish the self-direction and self-motivation needed to perform” (Neck & Manz, 1992, p. 682). Research has shown the proper understanding and implementation of self-talk leads to its efficacy. Self-talk has been found to be most effective when fine skills need to be accomplished - skills that require accuracy and precision rather than skills that require endurance and strength. Also, instructional self-talk, which is self-talk that explains the process of what needs to be accomplished, is more effective than motivational self-talk, which is general self-talk that incites motivation, when it comes to fine skills (Hatzigeorgiadis et al., 2014, p. 83). Furthermore, self-talk is more effective in novel tasks rather than in well-learned tasks (Hatzigeorgiadis, et al., 2014, p. 82).

Self-talk has a long established history of improving athletic performance. In an experiment where twelve gymnasts who were competing to be on the U.S.A Men’s Olympic
team were studied, the authors found the athletes who used self-talk were the ones who made it on the team, and the athletes who did not use any self-talk did not make the team (Mahoney & Avener, 1977, p. 135-141). Other research has shown less dramatic, though still favorable, results. Hatzigeorgiadis et al. (2014), which includes a study by Mallet and Hanrahan (1997), showed the effects of utilizing self-talk in different parts of a 100m race for young, elite athletes (p. 83). The results showed the athletes improved their times by 2.3%. In a similar experiment involving young swimmers, the results showed self-talk led to a moderate performance increase in the experiment group as compared to the control group (Hatzigeorgiadis Galanis, Zourban, & Theodorakis., 2014, p. 89). Research also has shown that self-talk has positive effects beyond the world of athletics. In an experiment where the behavior of impulsive children was measured on a set of psychometric tests which tested cognitive impulsivity, behavior scores improved after the children were trained to use self-talk (Meichenbaum & Goodman, 1971, p. 124).
CHAPTER 3: METHODS

Athletic Trainers (AT), have the opportunity to work in many different settings and have had many years of formal training in rehabilitating athletes. They have had the opportunity to learn about both the physical effects of injury, as well as the psychological impact an injury can have on an athlete. The knowledge that AT’s have learned about the physical have been put into action, while their knowledge about how to incorporate the psychological aspects of recovery has not been utilized. This project was designed to help bridge this gap of knowledge and practice. In order to do this, the project designer researched psychosocial intervention techniques, specifically imagery, and created imagery scripts in audio form that were provided to injured athletes. Studies have shown the use of cognitive-behavioral intervention techniques have positive effects on both the psychological and physical components of rehabilitation (Cupal & Brewer, 2001. p. 30).

Extensive research was done and consideration taken to decide which mental training techniques or psychological interventions to include for the audio scripts. During the literature review the project designer found there were many different mental training techniques and interventions, and part of the process was deciphering which would be most effective to use with an injured athletic population. Once the actual process of the literature review was started, the project designer found there were not many mental training examples easily accessible for AT’s to use with athletes during the rehabilitation process. The project designer looked into different settings that have used psychological intervention techniques. The two main settings were in a sports context to increase sport performance, and the other in a clinical setting, using interventions for pain management. Both settings displayed beneficial aspects that could be tailored to injured athletes dealing with pain, injury, and recovery. Having access to multiple
research articles from these settings, the project designer was able to combine them into tools to be used during the rehabilitation process.

The project designers decided on the use of imagery; self-talk, goal-setting, and deep breathing, because they met the criteria and were the most popular psychological interventions used. As established by the research, often an injured athlete responds to those injuries in the form of fear, confusion, anger, and depression. The purpose of an audio based psychological intervention tool was to help minimize these emotions and assist athletes in their pursuit for return to play.

Imagery has been one of the most popular and effective psychological intervention techniques used in sport and rehabilitation settings. Having been used in the hospital setting and the sports performance setting, it plays a role in increasing sports performance and helping decrease pain, stress, and anxiety. Imagery has been associated with reduced stress, blood pressure, and depression (Scherwitz, Mchenry, & Herrero, 2005, p. 69). Imagery has also been associated with increased performance in sport, which is a goal of rehabilitation. Although the project focused on creating imagery scripts, other psychological skills were included in the scripts, such as self-talk. Self-talk is used by almost all athletes on a daily basis without their own conscious knowledge. Self-talks for the purpose of this project was incorporated in order to help curb any negative self-talk athletes have about him/herself during the rehabilitation process. Self-talk has also been effective with accomplishing fine motor skills, skills that require endurance and strength (Hatzigeorgiadis et al., 2014, p. 83). Some aspects of goal-setting were also incorporated into the scripts, as goal-setting has been associated with efforts in helping athletes achieve better performance in their sport, but has also been widely used in the clinical setting to help with rehabilitation. The use of goal-setting assists athletes in achieving smaller
goals which also assists in their ultimate goal of return to play. Goal-setting has also been associated with helping athlete’s confidence once they achieve a goal (Reese et al., 2012, p. 77). Deep breathing was another psychological intervention techniques included in the imagery scripts because deep breathing has been associated with relaxation and increased focus (Reese et al., 2012, p. 71).

During the start of the literature review many different formats were looked into on how to best utilize these techniques. The first way that was decided on was to use it in a pamphlet manual along with audio. In this version each psychological intervention that would be used would be described in a pamphlet that would later be handed to the athlete. With the pamphlet there would also be an audio that would be emailed to each athlete. The audio would guide that athlete through an imagery session. The pamphlet itself would have directions on how to use the other psychological intervention techniques. Under the advisement of committee members including two certified sport psychology consultants (CC-AASP), and a clinical psychologist, it was determined that the best option for the scope of this project was to create imagery scripts for athletes recovering from ACL surgery, and incorporate some of these other psychological skills such as self-talk, goal-setting and deep-breathing within the imagery scripts rather than having separate scripts or interventions for each skill. The intention of this was to keep the training simpler for the athletic trainer as well as athletes listening to these audio scripts on their own.

The imagery scripts were recorded on a program called Recorder Plus Lite which was downloaded onto the project designer’s iPad mini from the Apple Apps store. The program was chosen because it was a free program and allowed the user to be able to export the audio and send it to a computer to be able to send it to others via email. The project designer was able to cut and edit the audio for free. Once the program was downloaded, the project designer had to
spend a couple of hours trying to figure out exactly how to record, save, edit, and send each recorded audio record. Before each audio was recorded, each script and/or directions were transcribed. Once the scripts were transcribed, the project designer was able to practice each and then record the audios.

After consultation with a certified sport psychology consultant it was determined that the best option for this project would be to base the interventions only on audio scripts, rather than paper pamphlets. An audio based project made it more easily accessible by the athletes and more easily transferrable to other athletic trainers, and furthermore it would coincide with this electronic world. The initial audios consisted of instructions for some of the psychological intervention techniques such as goal-setting and actual scripts for others, such as imagery with the possibility of making more audios of imagery that would be more specific to specific injuries.

Any information collected from athletes during this process was pilot data, not intended for research or publication purposes, solely for the benefit of improving the imagery scripts included in this project. The first drafts of audios were initially emailed to ten student athletes at CSUN for them to review and provide feedback on what they believed could be improved. The athletes included males and females from volleyball, soccer and softball. Injuries included two post operation ACL, three ankle sprains, two stress fractures, and three athletes that were not injured but had previous history of working with a sport psychology consultant (table 1). The final three athletes each had a good experience while working with their sport psychology consultant and provided useful feedback as well. All athletes were current student athletes from CSUN, ages 19-22 and were on the current roster for their respective teams. CSUN athletes were chosen because they were already under the supervised care of an athletic trainer, and also because of their availability and the rapport the project designer had with them as an athletic
trainer. Once the project designer received the feedback from the ten CSUN athletes, appropriate changes were considered and made to the imagery scripts. Once the initial changes were made, the project designer sent out the new audios back to the participating athletes. When the project designer received the new comments and feedback, they were incorporated into the new audios.

<table>
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<th>Ankle Sprain</th>
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After the colloquium it was decided to narrow the scope of the project to focusing on imagery scripts specifically for athletes suffering from a torn ACL. ACL was chosen since there are many athletes at CSUN that are recovering from ACL surgery and in different stages of the recovery process.

At the time of the project there were currently three athletes under the care of the athletic training program with either a current ACL tear or in rehabilitation following ACL reconstruction surgery. Pseudo names were provided for each athlete to protect their identity. The first athlete (Alison) chosen was a female softball player and had just recently torn her Right ACL. At the time of intervention Alison was in the first stages of recovery as she has just had surgery. This was Alison’s first ACL tear. The second athlete (Debra) chosen for the audio
imagery intervention was a female soccer player that was 3 and a half months post ACL reconstruction at the time of the project. Debra was about to start her progression on running and this was her second ACL reconstruction. Her first ACL reconstruction surgery was on her left knee, and the current ACL injury was her right knee. The third and final athlete (Michelle) was also a female soccer player who was 6 months post ACL reconstruction surgery at the time of the intervention. Michelle was just starting her agility workouts and at the time was 3 months away from return to play. This was Michelle’s first ACL reconstruction and it was the left knee that was injured. These three athletes were chosen because of the high occurrence of ACL tears in female athletes and also because of their availability.

<table>
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<td>Michelle</td>
<td>SOCCER</td>
<td>20</td>
<td>LEFT</td>
<td>6</td>
<td>NONE</td>
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Once the project was altered to only include imagery for ACL reconstruction surgery recovery, additional advice and research was needed to create new scripts for the athletes. Images of positive healing and images to help in harnessing someone’s own healing powers, images of positive healing and images of fully being recovered were included in the scripts
The combination of a relaxation and guided imagery has been found to significantly help with greater knee strength and lower levels of reinjury anxiety and lowered pain in patients recovering from ACL reconstruction surgery (Cupal & Brewer, 2001, p. 35). Therefore, inclusions of words such as “healing” and “seeing oneself getting better” were crucial to include in the new scripts. In addition words such as “repairing” and “visualize your knee getting better” were other key words to help harness healing powers and recovery. Social support is also a very important aspect of rehabilitation. Studies show having a social support group has been linked to limiting effects on negative life stress (Green & Weinberg, 2001, p. 46). Helping the athlete remember their social support during the imagery script was a way of limiting those negative thoughts. There has also been a correlation between having positive self-talk and duration of healing (Ievleva & Orlick., 1991, p. 34). Therefore, by having athletes change their negative thoughts into positive thoughts during the imagery session, it has the potential to result in a more satisfied and a faster rehabilitation.

Deep breathing was incorporated into the imagery session to help focus the athlete’s attention at the task at hand and also deep breathing has been associated with preparing the athlete to tackle the task at hand and not just thinking about the task which can cause unwanted anxiety (Reese et al., 2012, p. 77). Relaxation which is a product of deep breathing has been shown to decrease feelings of frustration, anger, and depression (Reese et al., 2012, p. 77). Deep breathing was included at the beginning of each imagery script to help decrease potential fears and frustrations experienced by the injured athletes before beginning their rehabilitation.

During each stage of rehabilitation athletic trainers have certain goals that they like to accomplish with an athlete. During the first stage, ATs want to decrease pain and swelling. The stage is to assist the athlete in increasing strength and range of motion. And finally once the
athlete is able to fully weight bear and has clearance from the physician to walk, the next step is
to help in gate training and continue previous goals. Gait training involves first analysis of an
athlete’s walking form and then making changes to this form to provide a functional gait. The
purpose for gait training is to correct any antalgic gait the athlete will have from surgery (Starkey

After the walking stage the next stage is the running progression. Again this stage is
similar to the walking stage. The following stage is to incorporate weight training and agility
work in the rehabilitation process. And the last stage of rehabilitation for athletes returning from
ACL surgery is the return to play. For the purposes of this project it was determined to fashion
an audio based imagery intervention to address all three of these stages. Following the layout of
Cupal and Brewer’s (2001) research as a guide for this project they had ten audio based imagery
sessions with post ACL reconstruction patients, the first stages included learning breath-assisted
relaxation techniques. For stage two they incorporated techniques in order to reduce knee
trauma and pain management, such as incorporating key words to assist in the reduction of
swelling and pain management. In their third stage they incorporated stages of flexibility,
reducing of pain, and coping techniques. During the fourth stage Cupal and Brewer’s (2001)
model they emphasized increasing strength, full range of motion, and increasing confidence.
Similarly for this project the focus was on the above mentioned principles in order to increase
range of motion facilitation, coping techniques, pain management and agility following ACL
surgery. This projects last stage also included imagery of return to play and performance on the
field. Using Cupal and Brewer’s (2001) research as a guideline on what to include in the imagery
session, the project designer was able to write a new script for the ACL injured athletes.
Once the new scripts were written the new scripts were recorded with the assistance of a certified and experienced sport psychology consultant in order to help with the cadence and timing of the scripts. Each of the new imagery scripts was geared towards different stages of post ACL reconstruction surgery. Each script ended up being from eight minutes to ten minutes in length. Once the voice recordings were completed they were emailed to each of the three athletes which also included an optional questionnaire to be filled out by the athletes. The questionnaire was optional, however the three athletes decided to fill it out providing some additional feedback about the imagery session. (Appendix G). Appendix A-F displays the final scripts and questionnaire. Again the information collected was not intended for research purposes or publication, but was solely collected to make any adjustments to the imagery scripts designed for this project.
CHAPTER 4: RESULTS

Although there was no data collection during this project, there was feedback given by each of the three athletes mentioned. Three different athletes at three different phases of their ACL reconstruction recovery rehabilitation were given two different imagery sessions, each specific to their phase of recovery. Each athlete was given a questionnaire to provide feedback on each session (appendix G). The feedback received from each athlete showed a positive experience with each imagery session.

When each athlete was asked about what their experience was with this imagery session? Alison commented, “I felt very calm and relaxed throughout the duration of the session. It really helped me to be in tune with how I was feeling at that point in time.” As Alison is in her first stage of her post ACL reconstruction recovery and the main goals at this moment were to help decrease pain and anxiety, the imagery session accomplished that by allowing her to relax. With Debra who was just starting to run, her comments about the imagery session were geared towards how she felt about her knee to what it used to be, “I was able to feel better about running and started to think more about how far my knee has come along and really noticing the difference from a month ago to now.” This can result in a sense of accomplishment for Debra. After her imagery session, Michelle commented,

My personal experience in this imagery session was I was able to visualize myself playing which I haven’t been able to see in a while. It brought memories and feelings I used to feel when I was playing and completely healthy. It reminded me of the competitiveness I actively practiced when I was playing. That attitude I so easily demonstrated has slowly slipped away since my injury. I enjoyed the feeling of relaxing
my entire body and solely focusing on my knee and the journey I have been through to get where I am today.

Before her imagery session Michelle was having trouble seeing herself playing again and being competitive. After she used the imagery session she was actually able to see herself play again and was able to imagine herself on the field once more. Her statements reflect the symbolic learning theory (Weinberg & Gould, 2011 p. 301), where her imagery helped her to rehearse and reinforce the memory patterns making specific plays and learning what it takes to accomplish these plays. Both Michelle and Debra used the imagery sessions as a way of seeing the improvements they have had thus far. For them it was a way of motivating themselves and incorporating positive thought into their rehabilitation.

When each athlete was asked about the difficulty of following the script they responded in a positive manner. Alison stated, “The script was very simple to follow. The dialogue was clear and precise. There weren’t any moments of trying to interpret what was said.” Having a cadence that allows the listener enough time to visualize what is asked for them is important. Debra had the same type of response. “It was very easy following the script and being able to visualize what was being said for me to think of. Nothing was confusing or doubtful in my thoughts, just straight forward and to the point.” Michelle was surprised by how easy it was to be able to follow the scripts, “It was surprisingly really easy to follow the script. There were no confusions or misunderstandings. The speed was nice and slow allowing myself to follow the instructions exactly.” Having a script and cadence that allows the listener enough time to accomplish what is asked of them during the session allows for a better and more successful imagery session.
Availability of imagery sessions during rehabilitation were the biggest goal of this project and each athlete was asked about how often they incorporated their imagery session for their rehabilitation purposes. For Alison it was a way for her to curb her negative thoughts during the day, “I listened to the imagery sessions whenever I was having a rough day mentally. It helped me clear my head of any negative thoughts that might have entered my mind.” Debra started using the imagery sessions and what was said in the sessions almost every day when she was about to run or do her rehabilitation,

I personally think about it every time I know I am going to run or even every time I have rehab. I look at my muscle and think about how it has gone up so much in just about a couple of months and is going to get better and better. When I run, I think about how I was barely able to walk at one point and now that I am able to run I have made a big impact.

The main purpose of the project was for each athlete to use the imagery scripts as much as they could to help facilitate a full approach to their rehabilitation. The quotes given by Debra demonstrate her use of the imagery sessions on a regular basis. Michelle used her imagery sessions much in the same was as Debra did,

I am able to incorporate this imagery session into my rehabilitation sessions with practicing confidence in my knee. There are some exercises or movements that I may lack confidence only because I fear they are going to hurt or my knee may not be strong enough. Most of these are mental issues rather than physical. This imagery session can aid to that lack of confidence in those specific areas.
For Michelle she also used it as a way to increase her self-efficacy and confidence during specific exercises.

Each athlete was also asked whether certain things that were said in the script were easily imaginable for them. For Alison it was an easy process. “Imagining things was very easy. The mood of the speaker was relaxed and soft so it made it easier for me to relax and take in all of the words that were being said.” For Alison, who is at the beginning stages of her recovery being able to relax and able to imagine what has been said is a way to assist in her recovery. Debra was again able to see herself playing her sport and going through the motions, “I was able to imagine everything pretty easily. It was straight forward and had enough detail to imagine myself in that very moment and seeing myself go through the motions and even picture myself playing again.”

For Michelle, she was able to use the imagery sessions as a way of rehearsing her game, however she still had some trouble seeing herself accomplishing certain tasks. Although she had some trouble in certain tasks, she uses it as a learning experience,

It was not that difficult to imagine myself playing or making plays. I tried focusing on myself applying the exercises I do in rehab to the game and practices. I also tried visualizing myself going in hard for a tackle and not fearing another injury. It wasn’t as easy to visualize those specific instances for some reason, but that shows I can work on those aspects of the mental game.

For both Debra and Michelle, each athlete was having trouble seeing themselves advancing in their respective stages of recovery. For Debra who is in her running progression phase and still has concerns with her running motion, being able to visualize herself going through the motion further enhances her rehabilitation. For Michelle she was having trouble seeing herself competitive again
and being able to do what she was able to previously. With the imagery session both athletes were able to visualize what they had trouble with previous, this once again demonstrates the symbolic learning theory (Weinberg & Gould, 2011, p. 301). Each athlete was learning the skill again and with this theory they know exactly what it takes to accomplish that goal.

The last question asked on the questionnaire provided to the athletes, asked if there was anything they would want to change from their experience with each imagery script. Both Alison and Debra had similar responses on changes for the sessions. Alison stated, “I would not change anything about the imagery sessions. They were very helpful and I will be continuing to use them throughout the duration of my recovery.” Debra had a similar experience and stated, “I personally believe that this was a good audio and was able to help me think of things differently and in different perspectives. I do not think that anything needs to be changed.” Both Debra and Alison felt that the session was fine the way it was, both felt encouraged to continue to use the sessions and felt that it made them look at things differently.

However, Michelle was able to give some feedback on what to change for future sessions,

Although I really enjoyed this imagery session, I think an aspect that could be changed are more examples of what to visualize. I would tap in to more of the mental side of the game. I found it a little difficult on exactly what to visualize and it would have been helpful to get some ideas of how to visualize myself.

Although the collected feedback was only pilot data used to improve the imagery scripts, the responses from each athlete showed positive feedback. Each athlete was able to incorporate both the psychoneuromuscular and the symbolic learning theories into their rehabilitation. Each
imagery session addressed the main concern of each athlete during their phase of recovery. The feedback also shows the need of using psychological intervention techniques with the rehabilitation process to accomplish a full approach to rehabilitation. Having created six different imagery sessions for three different athletes at three completely different stages of their rehabilitation displays the transferability of the project for future ATs to use with their athletes for a variety of different injuries.

CHAPTER 5: DISCUSSION
The purpose of this project was to assist athletes recovering from ACL reconstruction surgery, by incorporating psychological intervention techniques, specifically imagery into the rehabilitation process. This project highlighted the importance of helping athletes receive a full approach to rehabilitation, especially when no sport psychology consultant is available or accessible. This project does not remove the need of a sport psychology consultant; however it does provide an example of how imagery and other psychological skills training can be incorporated for an athlete with the assistance of an AT. This project provides a guide that future ATs can use with their athletes to help in the recovery process.

During the process of getting feedback from each athlete, the project designer was able to observe some changes as well as get valuable feedback. From observations done by the project designer, he was able to see the three athletes in a more relaxed state as they continued with their rehabilitation process. Each athlete also told the project designer that they felt more relaxed while getting treatment than they had before the imagery session. The results from feedback showed a positive correlation with the use of these imagery sessions. They also show the use of both the psychoneuromuscular theory and the symbolic learning theory in action (Weinberg & Gould, 2011, p. 301). The psychoneuromuscular theory explains that when these athletes use imagery they gain knowledge of the motor skill because neuromuscular activity patterns are activated (Weinberg & Gould, 2011, p. 301). For all three athletes being able to see themselves do a specific exercise demonstrates this psychoneuromuscular theory. All three athletes also displayed the symbolic learning theory, which states individuals using imagery for specific tasks will understand and acquire the patterns needed to complete that task (Weinberg & Gould, 2011, p. 301). For all three being able to visualize themselves accomplishing the task gives them
knowledge on what is needed to complete that task. This was specifically evident with Debra as she had trouble with specific exercises prior to her imagery session.

Although the feedback from each athlete was positive there were some recommendations for changes that can be made for future interventions. Michelle asked for more specific plays for her agility imagery session, which can lead to more vivid visualizations. The project designer also recommends using these imagery sessions as a blueprint for other AT’s to formulate sessions for their athletes regarding different injuries. With the changing of key words in the session, an AT can encompass most possible injuries. With the changing of words such as knee to shoulder or wrist can adapt the imagery session to another athlete.

Although the imagery scripts appeared to be beneficial to the athletes in this project, further research should be conducted. The main purpose of this project was to provide an example of a tool that could be created and used by AT’s when working with injured athletes. The project was not intended to be a full research study and only looked at the intervention tool applied to 3 female athletes recovering from ACL surgery. Ultimately further research needs to be conducted on the benefits of imagery scripts and other psychological interventions with a greater variety of injuries and population diversity. Feedback collected from the questionnaires was only pilot data used to improve the imagery scripts and not intended for research or publication. Future research studies should analyze the effects of psychological intervention techniques on return to play time for injured athletes. More study on inclusion of different injuries and different severity of injuries could play a role in how athletes perceive each imagery session.
The project clearly illustrates the important role that AT’s can play in helping their athlete, not only from a physical but also psychological standpoint. The imagery scripts for ACL recovery provide a blueprint for how AT’s can create other imagery and mental training scripts in order to assist injured athletes during different stages of the recovery process. The project also illustrated the severity an injury has on an athlete and the benefits they can receive from these types of imagery scripts. This project was designed in hopes for future AT’s to make their own imagery scripts to help facilitate more uses of psychological intervention techniques during the rehabilitation process.

Based off of my observation I found the use of imagery can have a major impact on athletes recovering from ACL reconstruction surgery. Seeing the results first hand and being able to speak with the participants displayed the importance of including psychological intervention techniques during the rehabilitation process. Having a full rounded approach to rehabilitation can result in a more satisfied athlete and better outcomes. This project showed me how I can make an imagery session to benefit the athletes I work with and give them a better recovery process.
REFERENCES


Appendix A

ACL Post Op Session One

An audio recording of this imagery session can be found by following the link below

https://www.youtube.com/watch?v=57HUrBUbBu0

This is your first imagery session following post ACL surgery. Find a quite comfortable place to lie down, someplace where you can close your eyes and no one will bother you for the duration of this session. Start by taking your shoes off and loosening any clothes that might be tight. Close your eyes. Now start by taking in a few deep breaths and I want you to really concentrate on using your diaphragm. Slowly take a breath in and slowly let it out, again focusing on your breath getting stronger and deeper with each inhale. Feel the breath going into your hips and feet. Continue with a few more breaths. Slowly in and slowly out. I want you to focus on your knee now. I want you to visualize all the swelling and I want you to visualize small workers in your knee taking away the bad injured tissue and replacing it with new healthy tissue and speeding along the repair and healing of your injury. I want you to think about with every breath you take these workers are gaining strength and energy and with each out breath you’re exhaling all that bad injured tissue. The workers are carrying it out with each exhale. Inhale with strength and energy, exhale carrying the bad tissue away. During this process these workers are healing and repairing your injury. Imagine these workers again with every deep breathe gaining strength and with each out breath they are carrying away the injured tissue. Imagine these same workers working hard to reduce the swelling to reduce the pain. Imagine thousands of these workers in there rehabbing your knee, reducing the pain. While your workers are working on your knee, if you have any negative thoughts, frustration, or anger, I want you to
remind yourself that you have thousands of these workers working hard. You also have your coaches, athletic trainer, and teammates supporting you. And replace these negative thoughts with positive thoughts. Remember you can do this; you can overcome this injury, this pain. For the next three minutes I want you to imagine these workers helping with the swelling, helping carry away the pain with each out breath. Now to end your session, imagine these workers outside your knee closing your incision sites. Now I want you to take a few more deep breaths feeling anymore pain or frustration, or any of these feelings completely leaving your body as you exhale. Come back to your body, feel the strength you have, you’re healing faster. Your body is working hard to repair your injury. Feel how relaxed and pain free you are. Feel how much better your knee feels. When you are ready, I want you to slowly open your eyes.
Appendix B

ACL Post Op Session Two

An audio recording of this imagery session can be found by following the link below

https://www.youtube.com/watch?v=Pt9FQF-ApO4

This is your second imagery session following post ACL surgery. Let’s start by finding a quite comfortable place to lie down, someplace where you can close your eyes and no one will bother you for the duration of this session. Start by taking your shoes off and loosening any clothes that might be tight. If you feel any negative thoughts, anger, or frustration, replace these negative thoughts with positive thoughts. I want you to remember that you have the support of your coaches, athletic trainer, and teammates. You can do this; you have already made a lot of progress. This is an injury you can and will overcome. Now start by taking a few deep breaths and I want you to really concentrate on using your diaphragm. Slowly take a breath in and slowly let it out, again focusing on your breath getting stronger and deeper with each inhale. Feel the breath travel through your body making its way to your knee. Continue with a few more deep breaths slowly in and slowly out. Once you feel that last breath reach your knee, I want you to shift your attention to your knee. I want you to visualize the remaining swelling, Imagine how much less swelling there is now. I want you to visualize small workers in your knee taking away the bad injured tissue and replacing it with new healthy tissue. Watch them as they remove all the scar tissue allowing your knee to bend more. With each breath you take in these workers gets stronger and more energized, exhale carrying out the bad tissue, the scar tissue. During this process these workers are healing and repairing your knee, allowing you to further be able to bend your knee. Inhale with strength and energy and exhale carrying away scar tissue. Imagine
these same workers working hard to reduce the soreness, the stiffness, and pain. Remember you are strong; this injury is something you can and will overcome. For the next three minutes, I want you to imagine these workers helping you gain your range of motion, helping you get rid of the unwanted scar tissue, allowing you to bend your knee, helping carry away any pain with each out breath. Now to end your session, imagine these workers outside your knee, helping you bend your knee. Now take a few more deep breaths feeling anymore pain, stiffness, or frustration, any of these feelings completely leaving your body as you exhale. Come back to your body, feel the strength you have, you’re healing faster. Your body is working hard to repair your injury. Feel how relaxed and pain free you are. Feel how much better your knee feels. When you are ready, I want you to slowly open your eyes.
Appendix C

Walking/Running Progression ACL Post op Session One

An audio recording of this imagery session can be found by following the link below

https://www.youtube.com/watch?v=DHgSooCIjxo

This is your third imagery session following post ACL surgery. Find a quite comfortable place where you can close your eyes, lie down and no one will bother you for the duration of this session. Start by taking your shoes off and loosening any clothes that may be tight. If you feel any negative thoughts, fear, anxiety, or frustration, replace these negative thoughts with positive thoughts. I want you to remember that you have the support of your coaches, athletic trainer and teammates. You can do this; you are stronger than this injury. This is an injury you can overcome; there is no need to fear. Now start by taking a few deep breaths and I want you to continue concentrating on using your diaphragm. Slowly take a breath in and slowly let it out, again focusing on your breath getting stronger and deeper with each inhale, feel the breath slowly move down your body, past your hips, finally reaching your knee. Continue with a few more breaths, slowly in and slowly out. Once you feel that last breath reach your knee, I want you to shift your attention to your knee. Imagine how much better it feels. Feel how much has already healed. I want you to imagine how much less swelling you have, how much you can bend your knee now. How much stronger it feels. I want you to visualize small workers in your knee. These workers have worked tirelessly to get you better. They have taken away the pain from your knee, they have taken away the swelling, and they have started to break down the scar tissue. These workers are now helping you get stronger. With each inhaled breath, you give these workers more strength and energy. Exhale carrying out any fear or anxiety. During this process
these workers are helping you get stronger, helping you walk better and getting you ready to
walk pain free. Imagine these same workers working hard to reduce the soreness, the stiffness,
and pain. Remember you are strong; you have worked hard and made great progress. For the
next three minutes I want you to imagine these workers helping you gain more strength, helping
you get rid of any fear or doubt; allowing you the ability to walk, and to walk pain free with each
breath. Now to end your session imagine these workers with you as you start to walk, with each
step you take they get stronger and they make you stronger. Now take a few more deep breaths,
feeling anymore fear, anxiety, or pain, any of these feelings completely leaving your body as you
exhale. Now see yourself back to walking around campus, not needing crutches anymore, being
able to walk to see your friends, walking around healthy. Come back to your body, feel the
strength you have, you’re walking better, your pain free. Your body has worked hard and
continues to work hard. Feel how relaxed you are. When you are ready, I want you to slowly
open your eyes.
Appendix D

Walking/Running Progression ACL Post op Session Two

An audio recording of this imagery session can be found by following the link below

https://www.youtube.com/watch?v=MNVuLynFyW0

This is your fourth imagery session following post ACL surgery. Find a quite comfortable place where you can close your eyes and lie down and no one will bother you for the duration of this session. Start by taking your shoes off and loosening any clothes that may be tight. If you feel any negative thoughts, anger, or fear, replace these negative thoughts with positive thoughts. I want you to remember that you still have the support of your coaches, athletic trainer and teammates. You can do this; you have already made it so far. This is an injury you can overcome; there is no need to fear. Now start by taking a few deep breaths and I want you to continue concentrating on using your diaphragm. Slowly take a breath in and slowly let it out, again focusing on your breath getting stronger and deeper with each inhale, feel the breathe travel through your body, past your hips, finally reaching your knee. Continue with a few more breaths, slowly in and slowly out. Once you feel that last breath reach your knee, I want you to shift your attention to your knee. I want you to see how much already has healed. I want you to imagine how much more range of motion you have now, how easy it is to bend your knee. How much stronger it feels. I want you to visualize small workers in your knee. These workers have worked tirelessly to get you better. They have taken away the swelling from your knee, they have taken away much of the scar tissue. These workers are now helping you get stronger. With each inhaled breath, you give these workers more strength and energy. Exhale carrying out any fear or anxiety. During this process these workers are helping you get stronger, helping you walk better
and getting you ready to run. Imagine these same workers working hard to reduce the soreness, the stiffness, and any pain. Remember you are strong; you have worked hard and made great progress. For the next three minutes I want you to imagine these workers helping you gain more strength, helping you get rid of any fear or doubt; allowing you the ability to run, and to run pain free with each breath. Now to end your session imagine these workers with you as you start to run, with each step you take they get stronger and they make you stronger. Now take a few more deep breaths, feeling anymore fear, anxiety, or pain, any of these feelings completely leaving your body as you exhale. Now find yourself back at your sport, running faster than you had before, competing again, healthy. Come back to your body, feel the strength you have, you’re walking better, your running. Your body has worked hard and continues to work hard. Feel how relaxed you are. When you are ready, I want you to slowly open your eyes.
Appendix E

Agility Progression ACL Post Op Session One

An audio recording of this imagery session can be found by following the link below

https://www.youtube.com/watch?v=5tMNNPq18-w

This is your fifth imagery session following post ACL surgery. Find a quite comfortable place where you can close your eyes, lie down, someplace where no one can bother you for the duration of this session. Start by taking your shoes off and loosening any tight clothing you may have. If you feel any negative thoughts, anxiety, fear, or frustration, replace these thoughts with positive ones. I want you to remember that you still have the support of your coaches, athletic trainer, and teammates. You can do this; you can make all the plays you did before your injury. You are stronger than this injury. Now start by taking a few deep breaths, as you take these breaths, I want you to concentrate on using your diaphragm. Slowly take a breath in and slowly let it out. With each inhale your breath gets stronger and deeper. As you continue to breathe in, your breath moves down your body until it reaches your knee. Continue with a few more breaths. Slowly in and slowly out. Once you feel the last breath reach you knee, I want you to divert your attention to your knee. See how well it has healed. Imagine how easy you’re able to walk and run. Imagine how strong it is, stronger than it’s ever been. Now I want you to visualize inside your knee, and I want you to visualize small workers in your knee. These workers have been here since you first got hurt, working to get you better. These workers are with you during each exercise, helping you. They have helped you get stronger and faster. With each breath in, you give these workers more strength and energy. Exhale carrying out any fear, pain, and soreness.
During this process these workers are getting you stronger, faster, they help you make cuts and change directions on the field. Image these workers working hard to reduce the soreness, the pain, and anxiety. Remember you are strong; you have worked hard and made great progress.

For the next three minutes I want you to imagine these workers with you on the field, helping you run side to side, cut with the ball, and making passes. Imagine these workers getting stronger with each move you make and they make you stronger. With each breath they push out any anxiety or pain you might have. Now to end your session, imagine these workers with you as you lift weights and get stronger, as you do plyometrics and become more agile. Now take a few more deep breaths, feeling any anxiety, frustration, and pain, any of these feelings completely leaving your body. Now find yourself back at your sport, cutting, changing directions, making plays better than before, competing again, healthy. Come back to your body, feel the strength you have. You’re moving better, faster, more agile. Your body has worked hard and continues to work hard. Feel how relaxed you are. When you’re ready I want you to slowly open your eyes.
Appendix F

Agility Progression ACL Post Op Session Two

An audio recording of this imagery session can be found by following the link below

https://www.youtube.com/watch?v=6GjNjQB7F-U

This is your sixth imagery session following post ACL surgery. Find a quite comfortable place where you can close your eyes and lie down, someplace where no one can bother you for the duration of this session. Start by taking your shoes off and loosening any tight clothing you may have. If you feel any negative thoughts, anxiety, fear, or frustration, replace these thoughts with positive ones. I want you to remember that you still have the support of your coaches, athletic trainer, and teammates. You can do this; you can play even better than you did before your injury. You can perform with the best players. Now start by taking a few deep breaths, as you take these breaths, I want you to concentrate on using your diaphragm. Slowly take a breath in and slowly let it out. With each inhale your breath gets stronger and deeper. As you continue to breathe in, your breath moves down your body until it reaches your knee. Continue with a few more breaths. Slowly in and slowly out. Once you feel the last breath reach you knee, I want you to divert your attention to your knee. See how great it feels. Imagine how effortlessly you’re able to run plays, how easy you’re able to dribble the ball and cut so fast. I want you to visualize all those small workers in your knee. These workers have been working with you since day one. See how much less workers there are now. They helped you everyday to get better. Your knee is healed and does not need them anymore. With each breath you give these remaining workers more strength and energy. Exhale carrying out any anxiety or fear left behind. During this
process these workers are making the final touches to your knee, allowing you to play with contact, allowing you to be able to plant your leg without fear, allowing you to play the best you have ever played. These workers continue to get stronger with each move you make and they make you stronger. With each breath they push out any anxiety left. Now for the next three minutes I want you to visualize yourself playing again, playing at a high level, playing healthy. Now to end your session, imagine these workers slowly leaving your body. Now take a few more deep breaths, feeling any fear or anxiety, any of these feelings completely leaving your body. Now find yourself completely healthy, playing with your teammates. Playing at a level you had not reached before, how great you feel playing again, how easy it comes to you now. You are healthy and you are ready to play. Come back to your body, feel the strength you have. You’re ready to play. You have worked hard for this moment. Feel how relaxed you are. When you’re ready I want you to slowly open your eyes.
Appendix G

Questionnaire

1. What was your personal experience in this imagery session?

2. How easy or difficult was it following the script?

3. How often did you incorporate this imagery session for your rehabilitation purposes?

4. How vivid was your imagery session?
5. Based on your experience, is there anything you would change about this imagery session or its delivery method?