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by

Lequita Williams, PT, DPT

December 2012

DEVELOPMENT WITH INITIAL VALIDATION OF THE PSYCHOLOGICAL  
READINESS TO RETURN TO SPORT QUESTIONNAIRE

A Thesis Presented to the  
Faculty of the College of Education  
University of Houston

In Partial Fulfillment  
of the Requirements for the Degree

Master of Education

by

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December, 2012

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### Abstract

Sports therapists are efficient in rehabilitating physical aspects of sports related injuries; however, health care providers have been somewhat remiss in recognizing and addressing psychological issues that may impact sports performance. The purpose of this study was to develop an instrument to accurately assess an athlete's psychological readiness to return to competition after a sports related injury. Questions were developed for possible use in the Readiness to Return to Sport Questionnaire with assistance from sports rehabilitation therapists, who assessed the items for face validity. Only items receiving 100% agreement were chosen for the 24-item Likert format pilot study questionnaire. A total of 170 athletes competing in various sports collegiately, semi-professionally, and professionally completed the questionnaire. The mean age of the participants was 23.41. Utilizing an exploratory factor analysis, pilot study results indicated that the questionnaire is reliable in determining an athlete's psychological readiness to return to competition after injury.

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## **Chapter I**

### **Introduction**

Sport participation is a highly respected pastime in the United States and around the world. It is also an essential part of maintaining a healthy lifestyle while concurrently allowing one to feel a part of society. Professional, college and sometimes Little League sporting events can completely fill up a stadium and flood the Internet and television stations. Knowing that sports are an integral part of society, the participants from Little League to the professional level develop a sense of responsibility, identity and relatedness. However, as physical skill demands of sports increase the risk for sustaining an injury often becomes an obstacle for these athletes (Podlog & Eklund, 2010).

Sports related injuries are a threat to each and every sport participant frequently resulting in disruption of the athlete's ability to perform. Finding a definition for a sports related injury is hard to come by even within the sports medicine literature. Generally the definitions follow the guidelines of including time loss, reporting practices, and pathology (Flint, 1998). For the purpose of this study, sports related injuries are defined as medical problems sustained while participating in sports which results in the need to become inactive from sport for at least one day (Dunn, Smith & Smoll, 2001). The severity of the injuries experienced by people participating in sports can range anywhere from a bruise to disabling spinal cord injuries, (Tripp, Stanish, Ebel-Lam, Brewer & Birchard, 2007) recurrent concussions, and sometimes death. In 2010, Eric LeGrande, a Rutgers University football player was paralyzed from the neck down (vertebral level C3) after making a tackle in a game against the Army (Bonifield, 2010). This is just one of many debilitating injuries that occur in sports every day.

In 2001, more than 70 million sports related injuries occurred in the United States requiring medical attention and at least one day of inactivity. An estimated two million injuries were incurred by college student athletes, and accounted for 500,000 medical doctor visits, 30,000 hospitalizations and millions of dollars for the cost of treatment (Dunn et al., 2001). In Switzerland, 286,000 people experienced sports related injuries and 1.5 million sports injuries in Germany (Horvath, Birrer, Meyer, Moesch, & Seiler, 2007). Sports related injuries may impact the athletes, their families and programs in which the athlete is affiliated with as a result of the adverse psychological and physical results (Dunn et al., 2001).

According to Clement and Shannon (2009), as technology progresses in sports medicine, the injured athlete is moving through the sports medicine process at a much faster pace than before. While this speaks volumes for the physical component of the sports injury, the psychological component associated with sports injuries is often overlooked. This can promote athletes returning to their sport well before he/she is ready to engage in the activity again. Trends are developing in health care and rehabilitation that are considering that the mind and the body are integrated systems and the mind plays a substantial role in the cause of the injuries, overcoming the injuries and perception of pain (Dawes & Roach, 1997). They also mentioned that sports rehabilitation specialists are in a unique position that enables them to influence emotional states, and potential for recovery rate during the athlete's rehabilitation process. More specifically, they need to consider the mood states of the athletes as they question their confidence concerning sports (Tripp et al., 2007).

Research suggests that athletic trainers have the ability to treat the injured athlete physically and the potential to treat them psychologically. However, these professionals are less than satisfactory when considering the knowledge necessary for treating the psychological component of rehabilitation (Stiller-Ostrowski, Gould & Covassin, 2009). The authors address the idea that sports therapists do not know how to effectively treat the psychological component of injury, which hinders the effectiveness of the overall care athletes receive before returning to sports. Therefore, this study will be a necessary component and instrumental in improving the quality of psychological trauma awareness during the rehabilitation process.

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Chapter II**

### **Review of Literature**

Considering the level of respect that society has for sports participation, it is no secret that many athletes participate in sports for many reasons. However, with the drive to participate in sports the risk of sustaining a sport related injury increases. The potential for sustaining an injury is even greater for athletes participating in sanctioned competitive sports at the scholastic, collegiate and professional levels. In many cases, athletes that engage in contact laden and high collision sports such as rugby and American football tend to continue to play in spite of injury. This altruistic behavior is often considered to be the norm as it relates to the Sport Ethic (Coakley, 2009; Flint, 1998). Undergoing sports rehabilitation to successfully restore the injured body part to withstand the stresses of everyday life, and sport competition, can last for several months at a time depending on the severity of the injury. Often times the immediate consequences of experiencing a sports related injury is a period of inactivity, possibly creating adverse situations for the athletes and their peers and/or environment. Ultimately this can elicit stressful situations for numerous reasons (De Heredia, Munoz & Artaza, 2004).

According to Coakley (2009) ideas pertaining to sports injuries and pain are instilled in aspiring athletes as soon as they enter the sport arena. The acceptance of risks, injuries, and various levels of pain is one of the core beliefs in the sport ethic (Coakley, 2009). Athletes are expected to accept pain, pressure, and fear without backing away from the challenges faced via competition. However, when looking at this concept from a sociological perspective, this behavior helps explain an athlete and his/her support group (i.e., coach, trainer, owner, etc.), and others' willingness to participate in a culture

of risk. These athletes and others are willing to compete in pain while subjecting their bodies to harm and danger in order to be deemed a true athlete. Athletes tend to participate in sports regardless of injury outcomes: current injury, future injury or permanent injury. Experiencing an injury can force athletes to ignore their pain because they believe in participating injured regardless of the consequences. Thus, behavior may manifest itself in the form altruistic fervor, which often endears the athlete to his/her teammates and creates a sense of bonding.

Many may think by not participating in their sport, the athlete will let the team down, let the fans down, show signs of weakness, or will lose skill sets. These athletes may ignore the signals that their body is giving. In a recent Coakley (2009) text former NFL player Matt Millen stated:

*You have to be selfish, getting ready for a game no one understands. It is the most unspoken but powerful part of the game, that deep seated desire to better at all cost, even if it means alienating your family or friends. Athletes will do anything to stay in the game, even sacrifice their own physical or mental being.*  
(p. 162)

Another athlete expressed a similar perspective:

*I had a pretty high pain threshold. I was willing to do anything to be successful, anything. When I got hurt, I made sure to get myself back into a game as soon as possible. It was do-what-you-have-to-do, and I did it all.* (p. 162)

Each of these athletes speaks to one of the many reasons why athletes eventually miss time in sports as a result of injury. However, the same reason athletes participate in

sports injured can also be a reason that athletes are afraid to return to sports after an injury.

According to Malinauskas, (2010), research suggest that there is evidence supporting the idea that returning to sport after an injury can be a challenging time for the athlete. Between 5% and 19% of athletes that experience sports related injuries report psychological distress levels that are comparable to people undergoing mental health treatment. Self efficacy and confidence beliefs of injured athletes can decrease before returning to sports (Glazer, 2009). An array of psychological variables such as life stress, motivation, and social support can influence the health, rehabilitation progress and the return to sport progress of injured athletes.

In most instances athletes strive to return to sports competition; however, the uncertainties associated with returning may bog down the mind of the athlete. This type of result warrants the attention and consideration during the rehabilitation process (Podlog, Dimmick, & Miller, 2011). Accurate measurement of athletes' psychological response to injury has been identified as a major concern in the recovery process (Mitchell, 2011). Some athletes need external motivation (Podlog & Dionigi, 2010), while others struggle with the fear of competence (Clement, & Shannon, 2009). Athletes look to the therapist to explain every aspect of physical rehabilitation, from how a particular exercise will affect the rehabilitation process to how likely it would be for a full recovery to occur (Gould, Urdy, Bridges, & Beck, 1997).

Quackenbush and Crossman (1994) mentioned that emotional reactions from athletes should be expected with a sports related injury. For athletes, physical conditions and abilities are prime components of self worth. These injured athletes can think

irrationally and exaggerate the meaning of their injury. The athletic rehabilitation staff members can participate in 90% of the counseling related to sports injuries, 77% of the counseling regarding sports related problems, and 65% spend time counseling personal problems (Stiller et al., 2009). Considering the aforementioned information surrounding sports injury and sports rehabilitation therapist, each sports therapist should consider treating the physical component to injury as well as screening for an underlying psychological injury.

Athletes are being transitioned out of sports rehabilitation and onto the field without regard to the psychological trauma experienced. If athletes are afforded the time to see a sports specific psychology practitioner the ability to confront possible detrimental psychological aspects of an injury such as fear of re-injury, decreased confidence, perceived helplessness, unrealistic expectation of recovery, and/or feelings of denial, frustration, and desperation, could be addressed concurrently with therapy, or after physical rehabilitation has been completed (Clements & Shannon, 2009; Glazer, 2009).

According to Gould et al. (1997), it is important to acknowledge that when dealing with an athlete's return to sport physical and psychological readiness may not happen concurrently. To date, much of the psychology in sports is understood with respect to the many phases of the injury process including, pre-injury and post injury (Urdy, Bridges, Gould & Beck, 1997). However, it appears that the profession of sports therapy is deficient in the return to sport phase, which begins around the time in the therapeutic process when athlete begin to perform sports specific exercises. As previously noted sport therapists often assess the acute phase which appears to be where the athlete experiences the worst psychological trauma. The trauma is expected to

diminish throughout the rehabilitation process as the athlete begins to progress toward more physical exercise, however there is a group of outliers that do not follow what is considered to be a normal set of psychological events (Horvath et al., 2007). Overall, sports clinicians understand that there is a lingering component to rehabilitation that may not be addressed by some rehabilitation therapists. However, learning how to treat these deficits is still to be determined (Gould et al., 1997). To date, there have been many studies that addressed the psychological component to sports injury, but only one study, based on this review, has addressed what needs to be done from the rehabilitation clinicians' position.

Based on the current literature (Gould et al., 1997) athletes feel that it would be necessary for sports medicine providers to work with coaches to facilitate and share information about their capabilities and limitations during the recovery process. While performing the literature review, there were five categories found to be supported as psychological components of returning to sports. The five categories include fear of re-injury, confidence in return to sport, athletic self concept, sense of control and expectancy to recovery. Each category seemed to have isolated importance for the concept of returning to sports. Understanding the importance of these categories can assist with clarifying an athlete's psychological state when he/she attempts to return to their sport. Therefore, each category serves a different purpose when determining if an athlete is ready to return.

The proposed study uses five categories to determine psychological readiness to return to sport. The first category used in the study is sense of control. Athletes risk experiencing pressure from outside sources to return to sports before they are physically



or mentally ready to return to sports (Podlog et al., 2010). Athletes may experience a sense of loss of control of rehabilitation and sport outcomes as a result of the pressure placed upon them to return to competition by external forces such as coaches, team organizations and others. Without social support athletes can feel isolated and risk detrimental effects of life satisfaction. It appears that social support is a necessary and integral component of the sports injury recovery process and overall quality of life.

According to Gould et al. (1997) athletes have expressed their concerns with respect to what their needs are when experiencing an injury and preparing to return to competition. From the athlete's point of view, coaches should assist the athletes in setting realistic performance goals, rebuilding confidence in competitive activity, overcoming fear of re-injury and providing reassurance in one's performance. In addition, athletes reported that athletic therapists also play a role other than typical rehabilitation. One athlete was documented as stating "They [sports medicine therapist] must push you a lot, yet they ...need to hold on the reins a little bit too" (Gould et al., 1997, p. 51).

Even famous elite athletes require motivation from external factors to return to the field of competition. A YouTube video about Lance Armstrong's return to biking after cancer, entitles "Lance Armstrong – The Total Athlete: Training off the Bike," depicted the importance of having social support. Lance Armstrong stated "he (Peter Park, strength and conditioning coach) was really good to me. It was that challenge that he issued to me a long time ago that started this whole thing." He felt that with his support he was able to return at the same level comparable to pre-cancer moments. Athletes look

for encouragement and motivation; however, the need for autonomy must maintain relevance in their progress and return to sport (Podlog & Dionigi, 2010).

Some athletes may experience autonomy at their own pace while others struggle to reach the level of autonomy necessary to function safely as an athlete due to premature engagement in sports after a sports related injury (Podlog & Eklund, 2007). The sense of autonomy can be undermined by the perceived external pressures (Podlog, & Eklund, 2009). Perceived lack of control in a situation may decrease the athletes post injury performance. The pressure can persuade athletes to decide to return to play while in pain or prematurely during the injury process (Podlog et al., 2007). Athletes prefer to feel responsible for their own rehabilitation. The athlete relies on the encouragement from the sports rehabilitation specialist to participate in his or her own rehabilitation program. This may give them a sense of control over the present and immediate future (Spetch & Kolt, 2001).

Another category that was highlighted as having importance to consider in terms of psychological readiness to return to sport is expectancy of recovery. Malinauskas, (2010) noted that the severity of an injury has an impact on life satisfaction, and the more severe the injury the more likely the athlete will experience a decrease in life satisfaction. Furthermore, perceived stress associated with decreased life satisfaction for athletes with major injuries is more prevalent than those who experience a minor injury. Concerns that the body would endure the physical rigors and stresses of sports participation is an important aspect of the athlete's definition of successful return to sport from an injury. A quote by an athlete named Frank in an article by Podlog et al., (2009) reads as follows:

*My confidence in my shoulder returned pretty early but not the confidence to actually throw the ball in...That's a skill which exerts the most pressure on the area. The fact that it got to the stage I am at now, where I don't even think about it or see it as an inhibitor or a problem, has really given me confidence in my shoulder. Like the rehab I've done, the operation, the strength training, I've done the right things and it's something that's given me a lot of confidence. And it's made me a lot better soccer player because of it. (p. 540)*

The literature supports fear of re-injury as a primary factor of poor performance and decreased drive to return to the field. Competence concerns regarding one's ability to remain un-injured is very common (Podlog et al., 2010). Data supports the idea that athletes that demonstrated concerns about re-injury were more likely to demonstrate lower levels of sporting activity (Tripp et al., 2007). Anxiety is an emotional response that athletes may experience when sustaining a sports related injury. There can be anxiety surrounding the re-injury or ability to return to previous levels of sports competition (Horvath et al., 2007; Podlog et al., 2011).

As defined in the article by Tripp et al. (2007), kinesiophobia is defined as an irrational and debilitating fear of physical movement resulting from a feeling of vulnerability to painful injury and re-injury. This type of response to injury has been associated with deficits in returning physical performance and an athlete's reluctance to return to sporting activity that may lead to re-injury (Tripp et al., 2007). For the sake of this study fear of re-injury is defined as the athlete's thoughts that returning to sport will result in another or the same injury.

Athletes can be so plagued with the fear of re-injury, while otherwise healthy, that they may never return to sport after having received medical clearance (Podlog et al., 2011). If the athlete does return to sport and continues to be anxious about re-injury he/she may have a negative impact on their performance, or experience attention disruptions which can lead to narrowed peripheral vision and susceptibility to becoming distracted. Some of these athletes may display malingering behavior, negative emotions with regard to returning to sport and/or hesitation to engage in sports related activity when physically appropriate (Podlog et al., 2007). Furthermore, research suggests fear of re-injury can become a significant predictor in post surgical levels of sporting participation and confidence of the athlete's ability to return to sporting activity (Tripp et al., 2007)

Confidence in return to sport and athletic self concept are the last two categories to consider when returning an athlete back to sport competition. For this study, confidence in return to sport is defined as the athlete's belief in his/her ability to return to sports while athletic self concept is defined as the athlete's view of his/her abilities to perform specific skills to be successful in sport. There is self-presentational concern about the possibility that the athlete will return to competition unfit, incompetence and lacking skill. Confidence levels in prior level of skills compared to prior skill ability may decrease after injury.

Athletes often hesitate when returning to high level competition because they lack confidence in their ability to return to pre-injury skill levels. When athletes are inactive for a period of time, especially in a sport like gymnastics or track and field, the ability to return at the same level of skill is hindered (Podlog et al., 2011). In other words, athletes

that injure body parts that are a significant part of their sport, such as a quarterback injuring his throwing wrist or a ballet dancer with an injury to her ankle, are also at risk for experiencing a decline in confidence surrounding sports skills.

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## Chapter III

### Purpose

There appears to be a lack of understanding about the injured athlete's psychological state during the rehabilitation process, especially in the phase of returning the athlete back to the field of competition. Once an injury has occurred returning to sport is the primary goal of most athletes. Rehabilitation is a conduit to achieving this goal. Nevertheless, this recent development has elicited the need for an instrument to evaluate the psychological readiness for return to sport. Therefore, the present study was designed to develop an instrument that would be influential in determining if an athlete is psychologically ready to return to sports after sustaining an injury.

### Study's Significance

**Implications for Research.** The present review suggests that there appears to be a significant loop holes in the current research on psychological readiness to return to sport. Currently the research has not suggested recommended guidelines to achieve the optimal results with the athletic population. The research is fairly new in this field which limits the ability to know if the approaches that have been attempted thus far are most effective in tackling this field of study. Furthermore, before one can develop an intervention understanding more psychological barriers to return to sport needs to be addressed. Thus, it is recommended that more research be conducted to determine not only the psychological barriers but interventions that can be used to address psychological readiness to return to sport.

This study will contribute to the current literature by creating an instrument employed by sports rehabilitation specialists to address the deficits in psychological

trauma when attempting to return the athlete to competition (Weiss, 2003). Furthermore, this instrument will allow the sports medicine specialist to determine if there is a need for a psychological intervention that should be addressed before returning the athlete to competition. This missing link is imperative in attempting to limit the number of athletes prematurely returning to sports after incurring psychological trauma associated with experiencing a sports related injury.

### **Implications for Practice**

The information gleaned from the literature review advocated for the incorporation of a psychological rehabilitation modality alongside a physical rehabilitation regimen before returning to sport. Although there is limited evidence to support an effective intervention once the sports therapist determines that psychological deficits are established it can be the baseline for developing a game plan for future practice. According to these finding, it would be reasonable and advantageous to promote psychological readiness as well as physical readiness before allowing an athlete to return to sport.

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Chapter IV**

### **Methodology**

#### **Participants**

Athletes were solicited during practices and competitions. Each athlete was approached by the investigator and asked if they would like to participate in a pilot study to determine readiness to return to sports. Each athlete that agreed to participate was further asked questions to determine eligibility for the study. The questions to determine inclusion criteria included: age of athlete, sport the athlete participated in, level of sport participation, most recent injury and length of time in which athlete was unable to participate in their sport.

Based on the inclusion criteria, there were 170 subjects included in the study with a mean age of 23.41 years old. The athletes were 13 males gymnast, 24 female gymnast, 6 male track and field athletes, 12 female track and field athletes, 8 male baseball players, 15 female softball players, 24 male basketball players, 36 female basketball players and 32 male football players. The athletes had experienced a sports related injury resulting in a season halting (requiring 2 or more months of inactivity from sports) or season ending injury within the last 2 years (least amount of inactivity: 3 months, greatest time of inactivity: 14 months). For the interest of this study, inactivity was defined as the inability of the athlete to perform any skill required to be performed by their sport as a result of restrictions due his or her injury. Athletes that were injured but continued to participate in their sport were not included in this study. Each athlete will have previously or currently perform at an elite level (ie college or professional level). I did not distinguish between athletes that sustained injuries that required surgery versus ones



that did not require surgery. Athletes will be excluded from the study if they do not fit all the criteria.

### **Item Formulation**

As addressed by Clement and Shannon (2009), many areas of concern surface when determining psychological readiness to return to sport. As mentioned, the categories in which the items were formulated include fear or re-injury, confidence in return to sport, self concept, sense of control, and expectation of recovery. A conceptual definition was developed for each of the categories. The definitions are as follow:

- |                                   |   |
|-----------------------------------|---|
| 1. Fear of re-injury:             | The athlete's thought that returning to sport will result in another or the same injury                           |
| 2. Confidence in return to sport: | The athlete's belief of ability to return to sport  |
| 3. Athletic Self Concept:         | The athlete's view of his or her abilities to perform specific skills to be successful in sport                   |
| 4. Sense of Control:              | The athlete's belief of his or her ability to be in control of his or her actions and results when playing sports |
| 5. Expectancy of Recovery:        | Athlete's belief of ability to make a full recovery with physical rehabilitation after an injury.                 |

The items for the Readiness to Return to Sport instrument were developed using the five categories to guide the content of the items. Through thorough research and informal conversations with athletes, parents, coaches and sports therapists 75 items were created for possible use for the Readiness to Return to Sport Questionnaire.

### **Face Validity of Items**

Four sports rehabilitation therapists (three doctors of physical therapy practicing as sports medicine therapist and one sports occupational therapist) were asked to assist in determining the face validity of the items developed for the Readiness to Return to Sport Questionnaire. Each examiner reviewed and assigned a number to each item designating the category the item best fit in based on the conceptual definitions given. The examiner was also asked to make suggestions on each item, if necessary. The four face validity questionnaires were then tallied and only the items that demonstrated 100% agreement were preserved for the final Readiness to Return to Sport Questionnaire. Once the final questionnaire was developed the questionnaire was ready to be issued to the athletes participating in the study.

### **Pilot Study**

The pilot study was designed to consist of two parts. The first part of the pilot study was the solicitation and verbal interviews of the athletes. All of the athletes that participated in the study were solicited via email or telephone. Once the athletes were determined to fit the inclusion criteria they were issued the questionnaire via email. Each athlete was required to complete an informed consent form followed by answering the 24 item Readiness to Return to Sport Questionnaire. Each questionnaire was returned via email to the investigator.

### **Potential Conflicts of Interest**

The author of this study did not receive any benefits related to the findings published. The motivation of the author was to search and utilize the best possible

treatment methods for the specific population without bias toward positive and negative findings.

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## Chapter V

### Results

#### Statistical Analysis

Data were collected from the Readiness to Return to Sport Questionnaire. Each of the 24 item responses from the pilot study was analyzed. Initially an  $\alpha$  reliability coefficient was computed. The  $\alpha$  reliability coefficient is a measure of internal consistency for multiple item questionnaires. The items were then analyzed for central tendency, and dispersion. The analyses of the items were used to solidify that each item did not yield a skewed distribution of responses as a result of the majority of individuals responding to one side of the Likert scale or the other. An analysis of central tendency and dispersion were performed. If items exhibited skewed values were reconsidered for the inclusion on the final questionnaire due to tendency to result in non-normal findings. Therefore, validity and reliability of the particular items were questioned.

An exploratory factor analysis (EFA) was employed using Statistical Package for the Social Sciences (SPSS) to assist in determining construct validity and extract variables associated with variations among responders. This method generally is utilized in scale development (Lee & Donahue, 2012). After extracting the factors, ideally the factors should be independent of one another and should not correlate highly with another factor. When this is found there is the possibility to determine the nature of the factor (Sax, 1997). According to Henderson & Roberts (2006), a sample size of 170 would be between poor and fair. However as component saturation increases, 0.8 or above (Lee & Henderson, 2012), there is a possibility that using a smaller sample size will be sufficient.

At a sample size of 100, 0.55 loading is considered a conservative level with 0.8 as a power level and 0.5 significance.

### **Pilot Study Results**

**Reliability to Measures of Internal Consistency.** The 24 items were entered into SPSS program where reliability analyses for four of the five categories and for the entire questionnaire were performed. Category 2 was omitted for internal consistency analysis because the category was represented by only one item. As illustrated in Table 1a, each category received an alpha coefficient of 0.93 or greater indicating relatively high internal consistency. The alpha reliability coefficient given for the entire questionnaire was 0.989 which also indicates relatively strong internal consistency of the items. The reliability coefficients for the four categories and the entire questionnaire were greater than the recommended Nunnally and Bernstein's (1994) cut off value of 0.7 (Lee & Donahue, 2012). Ultimately each category, except category 2, and the overall questionnaire were deemed to have acceptable internal consistency.

Table 1a.

*Measures of Internal Consistency for Categories and Questionnaire*

Category	Alpha Reliability Coefficient	N items
I. Fear of Reinjury	0.979	7
II. Confidence in Return to Sport	N/A	1
III. Athletic Self Concept	0.974	6
IV. Sense of Control	0.944	6
V. Expectancy to Recovery	0.931	4
Readiness to Return to Sport Questionnaire	0.989	24

Table 1b

*Measures of Internal Consistency for Categories and Questionnaire*

Category	Alpha Reliability Coefficient	N items
I. Beliefs about engaging in Sport	0.981	11
II. Beliefs about Preparation for Returning to Sport	0.979	9
III. Readiness to Return to Sport Questionnaire	0.989	24

While performing reliability measures on four of the five categories seemed appropriate, after performing an exploratory factor analysis it was revealed that only two factors seemed to explain the variance of responses. The scree plot, Eigenvalue measures and exploratory factor analysis with varimax rotation each extracted two factors as significant. The questions loading on each of the two factors (excluding the items with significant loading on both factors) were then examined for internal consistency (Table 1b). Items 3, 4, 5, 6, 7, 11, 12, 13, 15, 17, 19, 21, 23 loaded on Factor 1. The items were measured for internal consistency yielding an  $\alpha$  coefficient of 0.981 was yielded. Items 1, 2, 8, 9, 10, 14, 16, 18, 20, 22, 24 loaded on Factor 2. The items were measured for internal consistency yielding an  $\alpha$  coefficient of 0.979. These findings suggest the two factors measuring an athlete's readiness to return to sports hold strong internal consistency. The two factors extracted from the exploratory factor analysis are later examined in the discussion section of the paper.

**Central Tendency and Dispersion.** Given the results of central tendency and dispersion (see Table 2), there were some measures of skewness among the items. However, the measures were not statistically significant (2 standard deviations away from the mean) when considering the standard deviation of each equation.

**Factor Analysis for Readiness to Return to Sport.** Data from all 24 items were entered into SPSS for exploratory factor analysis. A principle component analysis was computed and attention was given to a Cattell's scree plot and Kaiser's criterion (eigenvalues >1). This allowed for reduction of data to determine latent structure. Both the scree plot and Kaiser's criterion (see Table 3 and

Table 4 respectively), were consistent with suggesting that the extraction of 2 factors would be most appropriate for the Readiness to Return to Sport Questionnaire. On the Cattell's scree plot the items began to level out at the 2<sup>nd</sup> item indicating that 2 components offered the best solution (Lee & Donahue, 2012). Given the information from Kaiser's criterion (Eigenvalue >1 rule), only 2 components were retained as a result of having Eigenvalue of 1 or more.

Further analysis was employed by entering data and performing an Exploratory Factor Analysis (EFA) employing both orthogonal (Varimax) and oblique rotations. Both were explored to determine the method more beneficial in yielding clear results. The items were fairly consistent with using the orthogonal and oblique rotations with the higher loading for items consistent with the two factors extracted. However, the EFA using the Varimax rotation (Table 5.) was more clear and concise when attempting to explain the two factors.



Table 2.

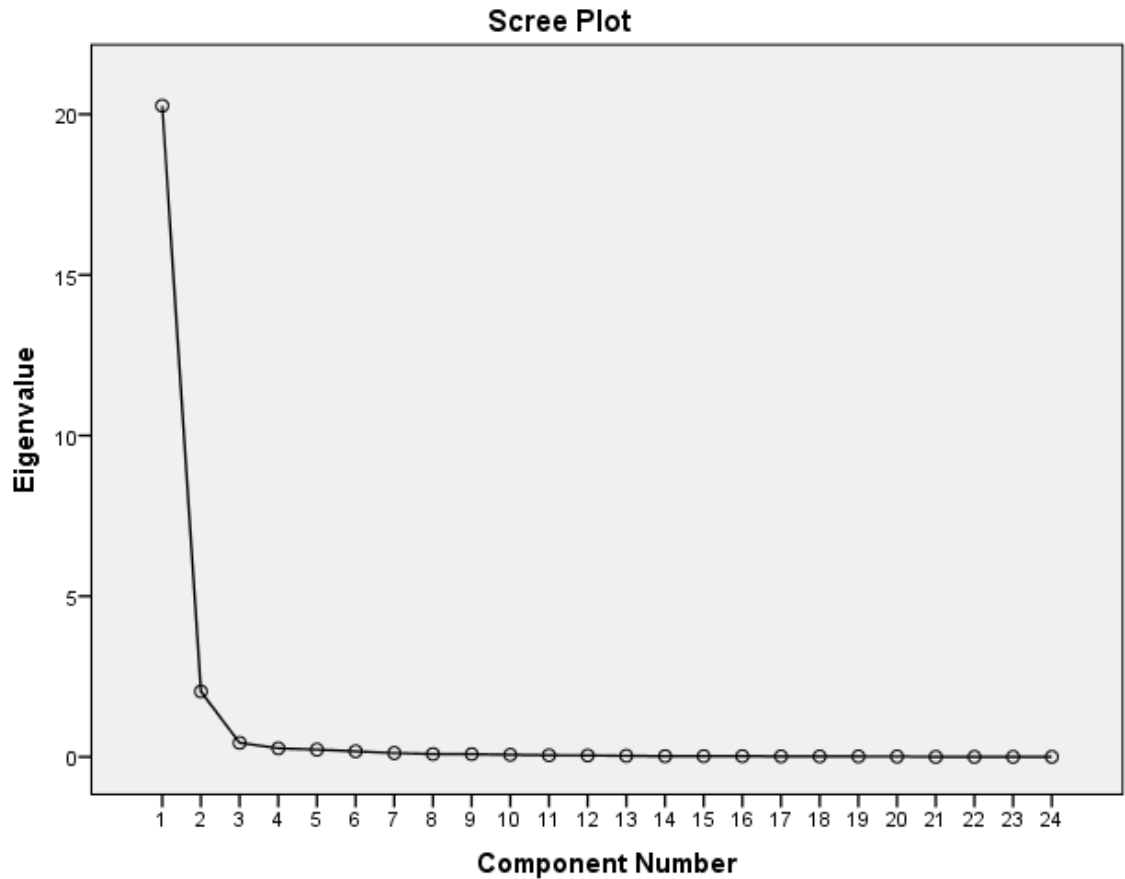
*Item Measures of Central Tendency and Dispersion for the Readiness to Return to Sport*

*Questionnaire*

Item	Mean	Std. Deviation	Skewness	N
1. If I fully engage in the sport my injury will occur again	2.7000	1.03689	0.81	170
2. I expect to make a full recovery from my injury	4.6412	.52798	-1.075	170
3. My coaches are the reason for my success in sports, with or without an injury	3.8176	1.26245	-.829	170
4. The most important part of my success in sport after experiencing injury, is my coach	2.8294	1.26410	.646	170
5. I will never be able to perform certain skills again due to my injury	2.3824	1.30122	.123	170
6. My sport requires high quality skills that I will not be able to perform again because of my injury	2.9000	1.38739	-.101	170
7. I can control my actions on the field/court/in the gym	4.3941	.70750	-.734	170
8. I can control whether or not I can perform at the level of sport I was able to before my injury	4.0706	1.20441	-.816	170
9. I am sure that I am ready to engage in my sport again	4.1647	.97722	-.760	170
10. My therapy is designed to help me make a full recovery	4.4471	.84973	-1.414	170
11. I must continue to always do my exercises because my injury is likely to happen again	3.7588	1.16434	-.792	170
12. I am afraid that if I play as hard as I did before, my injury will happen again	2.2000	1.28533	.922	170
13. If I go back to sports I will risk the same injury again	2.4529	1.09362	.067	170
14. I will not be able to perform all of the skills that I used to perform before my injury	2.6412	1.25720	-.019	170
15. My injury will not limit my ability to perform all of my skills when I return	3.9235	1.07694	-.508	170
16. I am in control of my success in my sport	4.3588	1.19444	-1.821	170
17. While engaging in therapy my injury will heal	4.3765	.73744	-.819	170
18. I am afraid that I will have the same injury again if I continue with the sport	3.0647	1.17742	.093	170
19. If I work hard enough I can control my progression in the sport after injury	4.3882	.89831	-1.345	170
20. I am concerned that I will not be able to control my success in the sport after injury	2.0118	1.27325	1.057	170
21. I will control whether I am successful in sport after my injury	3.9353	1.42316	-.957	170
22. I will injure myself again the same way if I do the same skill I did to injury it the first time	2.6176	1.51550	.578	170
23. I will be in therapy until I make a full recovery	3.7588	1.12821	-.538	170
24. I am afraid that I will have the same injury because I am not ready to go back to competition	2.4941	1.35545	.532	170

Table 3.

*Scree Plot*



Of the 24 items 13 items loaded on factor 1 with loading values of 0.706 and greater and 11 items loaded on factor 2 with values of 0.660 and greater. Loadings of .60 or greater were determined significant when interpreting the results. A loading of 0.55 is considered a conservative level according to Hair et al, 1998. They further suggest that a loading of 0.6 is the recommended value of significance (Lee & Donahue, 2012). Using this as a benchmark, 20 items clearly loaded on one factor or the other. The other 4 items (items 1, 6, 11, 23) exhibited a loading value of 0.6 or greater for both factors.

Furthermore, Category V was directly correlated to factor 1. Six of the seven Fear of Re-

injury loaded together, three of six Athletic Self Concept items loaded together, four of six items in Sense of Control loaded together and all five Expectancy to recovery items loaded together. A possible explanation for the split of the items between factors was further examined to determine significance.

Table 4.

*Eigenvalues*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	20.107	83.777	83.777	19.267	83.768	83.768	17.302
2	1.962	8.176	91.954	1.961	8.525	92.292	16.105
3	.3451	1.729	93.682				
4	.318	1.323	95.006				
5	.269	.20	96.126				
6	.190	.791	96.917				
7	.127	.528	97.445				
8	.109	.456	97.901				
9	.093	.388	98.289				
10	.078	.324	98.613				
11	.057	.236	98.849				
12	.032	.215	99.065				
13	.036	.148	99.213				
14	.032	.133	99.346				
15	.026	.108	99.454				
16	.022	.092	99.546				
17	.020	.085	99.631				
18	.018	.076	99.708				
19	.017	.069	99.777				
20	.013	.054	99.831				
21	.012	.049	99.880				
22	.011	.047	99.926				
23	.010	.040	99.966				
24	.008	.034	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 5.

*Exploratory Factor Analysis for Readiness to Return to Sport Questionnaire*

	Component	
	1	2
10. My therapy is designed to help me make a full recovery.	.920	
19. If I work hard enough I can control my progression in the sport after injury.	.910	
16. I am in control of my success in my sport.	.909	
21. I will control whether I am successful in sport after my injury.	.893	
8. I can control whether or not I can perform at the level of sport I was able to before the injury.	.855	
2. I expect to make a full recovery from my injury.	.839	
3. My coaches are the reason for my success in sports with or without an injury.	.822	
9. I am sure I am ready to engage in my sport again.	.817	
17. While engaging in therapy my injury will heal.	.799	
7. I can control my actions on the field.	.785	
15. My injury will not limit my ability to perform all of my skills when I return.	.764	
11. I must continue do my exercises because my injury is likely to happen again.	.712	.611
23. I will be in therapy until I make a full recovery.	.706	.632
20. I am concerned that I will not be able to control my success in the sport after injury.		.938
12. I am afraid that if I play as hard as I did before my injury will happen again.		.911
4. The most important part to my success in sport after injury is my coaches.		.898
22. I will injury myself again the same way if I do the same skill I did to injury it the first time.		.893
24. I am afraid that I will have the same injury because I am not ready to go back to competition.		.865
5. I will never be able to perform certain skills again due to my injury.		.805
13. If I go back to sports I will risk the same injury again.		.800
18. I am afraid that I will have the same injury again if I continue with the sport.		.775
14. I will not be able to perform all skills that I used to before my injury.		.766
6. My sport has high quality skills that I will not be able to perform again.	.634	.732
1. If I fully engage in my sport my injury will occur again.	.642	.660

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Chapter VI**

### **Discussion**

Sports participation is an important aspect of healthy living and a large part of society (Podlog & Eklund, 2010). Athletes spanning Little League level to professionals are continually progressing in skill level and demand in sports. These athletes risk injury each and every day they engage in their sports and the severity of these injuries are also worsening (Tripp et al., 2007). As a result, health care professionals involved in the care of athletes need to be ready for psychological and physical trauma the athletes experience through injury. As previously mentioned, with technological progresses in sports medicine athletes are moving through the therapeutic process at rapid speeds. The ability to determine if the athlete is truly ready to return to sports from a psychological aspect is lacking. Preliminary evidence gathered from the pilot study supported the idea that the Readiness to Return to Sport Questionnaire could be beneficial in allowing sports therapists to recognize when athletes are not psychologically ready to return to sports while being treated for the physical components of the injury.

This study may contribute to the field of sports medicine via the development of an instrument that may assist sports therapists and other individuals helping athletes, return to competition after sustaining a sports related injury. The idea of the study was to develop a reliable instrumentation that would assist the sports rehabilitation specialists in identifying when an athlete is not psychologically ready to return to sport competition. Ideally, athletes should consider seeing both a physical rehabilitation specialist and a psychological rehabilitation specialist prior to returning to competition. However, this

scenario is not always possible, whether it be lack of awareness of psychological trauma associated with sports injuries or lack of funding to support both rehabilitation specialists.

The questionnaire may give insight on psychological aspects of the individuals. Glazer (2009) reported  $\alpha$  reliability coefficient of 0.70 or greater as a good measure of internal consistency. Preliminary reliability measures support the stability of the Readiness to Return to Sport Questionnaire evident by the  $\alpha$  reliability coefficient given to each category measured and the questionnaire with the two categories included. Reliability coefficient were 0.981, 0.979 and 0.989 for Factor 1, Factor 2 and the entire Readiness to Return to Sport Questionnaire.

The pilot study results may also give insight on what normal responses from athletes may be. When athletes fall outside of the general responses consideration for psychological support may be necessary. The mind and the body are integrated parts and the psyche can play an important role in the recovery of physical trauma. Considering the results of the pilot study (Table 2) generally athletes do not fear reinjury with returning to sports and engaging in the sport at the same level prior to the injury. While the athletes felt that experiencing the injury would not limit their skill level when they return to competition they were less agreeable to the statements pertaining to skill level than reinjury. This mind set may occur because it is well known and documented by many sources that injury is a large risk when engaged in sports. Knowing this may - prepare the athlete for possible injury/reinjury and alert the athlete to alter certain skills as a result of his or her injury. This coincides with the information in the sports ethics Chapter in Coakley (2009) that athletes continue to engage in sport despite risk of injury.

Results from the pilot study highlight the fact that athletes are fairly neutral in their beliefs about their coach's role in their success in sport. Furthermore, they believe that they are in control of their success in sports. According to Gould et al., 1997 athletes feel the need to have sports medicine providers and coaches work together to facilitate and share capabilities which would be inconsistent with the findings from the pilot study. As well, Podlog et al., 2007 reported that athletes urge to have autonomy. The athlete's responses were in line with the findings as they reported they would in control of their success.

Initially the Readiness to Return to Sports Questionnaire was designed with five categories in mind. Each category represented different factors that address concerns around psychological stability after sustaining an injury which were revealed during the literature review. Athletes have voiced opinions about their relationships with sports therapist, coaches, peers and personal concerns after sustaining an injury when preparing to return to sports.

The five categories were fear or reinjury, confidence in return to sport, athletic self-concept, sense of control and expectancy of recovery. However, after performing the exploratory factor analysis it was further revealed that there were actually only two factors that explained the variance of results.

When considering the results from the exploratory factor analysis, the items were split almost evenly between the two factors. The items loading on each of the factors were examined for common ideas to determine the nature of the two factors. In examining the 13 items that loaded on Factor 1, there seemed to be a common theme. For example, item 8 reads: "I can control whether or not I can perform at the level of



sport I was able to before my injury”, and item19 reads: “If I work hard enough I can control my progression in the sport after injury.” Each of these items can be read and interpreted as thoughts or beliefs surrounding the times in which athletes are engaging in sports. For example, you cannot control the level of sport performance if you are not participating in sport (item 8). Each of the remaining 11 items seemed to support the same theme. As a result, factor one was named: Beliefs about engaging in sport. The items that loaded on factor two were also further examined to look for commonalities in the wording of the questions or possible interpretation of each of the item. Each of the items supported the idea that the item could be interpreted as beliefs about preparing to return to sport. For example, item 2 reads as follows: “I expect to make a full recovery from my injury”, while item 15 reads: “My injury will not limit my ability to perform all of my skills when I return.” When reading these items one may consider that if he or she is talking about expectations about recovery and “when I return,” he or she is not currently engaged in the sport. The items that reflected this type of outlook had significantly high loading on factor 2. After reviewing the items it was determined that factor 2 should be title Beliefs about preparation for returning to sport.

As previously mentioned, the results from the exploratory factor analysis suggested that approximately two factors explained majority of the variance of the results from the pilot study. Further examination of the items revealed that the two factors could be considered to be beliefs about engaging in sport and beliefs about preparation for returning to sport. These two areas are clearly on two separate spectrums of the recovery process. If the item was considered to fall under the beliefs about preparation for returning to sport category it is expected that the athlete would view the item as a belief

about the rehabilitation process prior to engaging in sport. For example, what the athlete's beliefs are of how well the injury will heal and if therapy will be beneficial in his or her injury. If the item was considered to fall under the beliefs about engaging in sport category it is expected that the athlete view the items as a belief about something that may occur while they are participating in their sport. For example, the athlete's belief about their coaches impact on their success in sport or their belief about fear of reinjury.

Overall, I believe it is important to incorporate both categories into the Readiness to Return to Sport Questionnaire each category brings an aspect of the psychological state of the athlete that the other does not. If the sports medicine staff focuses solely on the preparation to return to sports portion of the questionnaire the professional may miss the fact that there may be a fear component that may eventually limit progress in sports as found by Podlog et al., (2010). As well, if sports medicine specialists were to only focus on the athlete's beliefs about engaging in sports, he or she may neglect to see important information about the athlete's feelings of the progression of their injury. With the physical demands required by athletes today concerns that the body/injury would not withstand the stress of the sport may be important to address (Malinauskas, 2010). In addition to the fact that necessary information about the psychological state of the athlete may be missed, I believe incorporating both factors into the Readiness to Return to Sport Questionnaire will give the athletic rehabilitation specialist more information to review when deciding if an athlete should be considered for psychological rehabilitation.

### **Final Instrument**

Using the information gathered from the exploratory factor analysis and the measures of central tendency the final version was developed. All items fell within acceptable measures of skewness. As well, each category demonstrated internal consistency. With the support of results from the exploratory factor analysis, the questionnaire from the pilot study was adjusted to 20 items for the final instrument. The 4 items with significant loading (a value 0.6 or greater) for both factors were not retained for the final instrument. These items may have been ambiguous for the individual when determining how to answer each item (before engaging in sport or while engaging in sport). This will allow for clearer and more concise detailing when sports rehabilitation specialists are reviewing an athlete's psychological state.

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Chapter VII**

### **Conclusion**

Based upon the results of the pilot study, I have established preliminary evidence in support of a reliable questionnaire to measure the psychological readiness for return to sport. A final instrument was developed based on the results of the pilot study. The Readiness to Return to Sport Questionnaire appears to be a gateway to avoid returning athletes to sports after sustaining an injury before they are psychologically ready. This questionnaire can also assist in sport rehabilitation specialists and coaches recognizing when athletes may benefit from psychological interventions. However, further research for validation of the questionnaire is needed. A confirmatory factor analysis should be performed with another set of individuals and various sports to validate the study.

### **Explanation of Limitation**

The proposed study does not address all potential psychological factors that may contribute to the psychological trauma associated with experiencing a sports related injury. As well, validation of content will not be addressed, instead face validation of the items were determined. Nonetheless, these limitations could be an implication for future research.

### **Future Research**

Although measures of reliability and EFA results indicate the Readiness to Return to Sport Questionnaire is reliable in measuring whether an athlete is ready to return to sport after an injury in the interest of time some important measures were omitted. A confirmatory factor analysis should be conducted with a new sample in a follow up study. It may be advantageous to conduct a content validity study for the final instrument

created from the pilot study to further explore whether the content reflects the specific intended categories. Measures of internal and external validity were not assessed during this study and will also require attention.

## READINESS TO RETURN TO SPORTS QUESTIONNAIRE

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# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Appendix A**

### **Face Validity Form**

FACE VAILIDITY FORM

Instructions: The following items are being evaluated to determine appropriateness for inclusion in a questionnaire to measure an athlete's psychological readiness to return to sport after sustaining a sports related injury. Please consider aiding in the process of creating the questionnaire by categorizing each question in the item bank. When answering the following questions please consider the 5 categories defined below.

<u>Categories</u>	<u>Conceptual Definitions</u>
I. Fear of Re-injury	Athlete's thoughts that returning to sport will result in another or the same injury
II. Confidence in Return to Sport	Athlete's belief of his/her ability to return to sport
III. Athletic Self Concept	Athlete's view of his /her ability to perform specific skills to be successful in sport
IV. Sense of Control	Athlete's view of his/her ability to be in control of their own actions when returning to sport
V. Expectancy of Recovery	Athlete's belief of ability to make a full recovery with physical rehabilitation after an injury

Rating Items

- A. Please mark an X in the box of the Roman numeral corresponding with the category that you believe the item best fits.

	I	II	III	IV	V
1. I am confident that my injury is healed					
2. I am concerned about the level of ability I have returning to sport					
3. I will be able to get through my injury					
4. I am concerned that the skills in my sport are too demanding for my injury					
5. I am sure I am ready to engage in my sport again					
6. With work I can do all the skills I was able to do before my injury					
7. I am able to perform all the skills I was able to do before I was injured					
8. Some skills will require too much time to relearn since the break from sport due to injury					
9. I expect to make a full recovery from my injury					
10. With work I will be able to return to sport at the same level I was before					
11. I am afraid that I will have the same injury because I am not ready to go back to competition					
12. I will be successful in my sport because I will be able to relearn my skills and more					
13. If I complete all of my physical therapy my (injury) will not be a factor when I return to sports					
14. With rehabilitation I will not be able to fully recover from my injury					
15. I am not going to be 100% when I return to my sport					
16. I expect that my injury is not everlasting					
17. I will be able to relearn my toughest and hardest skills with practice after I return to sport					
18. I understand that physical therapy is an essential part of returning to 100% function					
19. My sport requires high quality skills that I will not be able to perform again					
20. Some skills will be easy for me to complete after return from injury					



		I	II	III	IV
21. I will be an asset to my team because I will be able to return to sport as good as before					
22. I am afraid that I will have the same injury again if I continue with the sport					
23. I will be able to make a full recovery from my injury					
24. My injury will get in my way for the rest of my life					
25. It will be easy to fall back in line with my sport					
26. Even if I go to rehabilitation as often as recommended I will not be 100%					
27. I must continue do my exercises because my (injury) is likely to happen again					
28. I must always remember that I have an injury when I am engaging in sports					
29. I can control my actions on the field					
30. My injury does not define my future ability to complete skills in my sport					
31. It will be a challenge but I will be able to return to the level of sport as before the injury					
32. I am afraid that if I play as hard as I did before my injury will happen again					
33. I do not have control over how I perform in sports					
34. I will be able to complete all of the skills I have performed before my injury					
35. I am confident that I can play my sport without sustaining the same injury					
36. I will never be able to perform certain skills again due to my injury					
37. I can be successful if I engage in therapy to successfully return to sport					
38. My injury will not limit my ability to perform all skills when I return					
39. It will be a challenge to return to the level of sport I was at before					
40. I will not be able to perform all skills that I used to before my injury					
41. I will never be the same athlete I was before					

		I	II	III	IV
42. I am concerned that my skills will all have to be changed when I return to sport because of my injury					
43. I will be in therapy until I make a full recovery					
44. If I go back to sports I will risk the same injury again					
45. I will be able to perform all the skills I used to when I return to sport after injury					
46. My therapy is designed to help me make a full recovery					
47. My coaches will determine if I can play well after sport					
48. I believe that no matter how hard I work I will not be at the same caliber as I was before					
49. My coaches are the reason for my success in sports with or without an injury					
50. It will be extremely difficult to return back to the level of sport I performed at before					
51. I will be just as good as I was when I return to sport					
52. The most important part to my success in sport after injury is my coaches					
53. I will only succeed with the support of my teammates after injury					
54. I am at risk of an injury because I cannot control what happens when I am playing my sport					
55. The most important factor to my success in sports after an injury is my therapist					
56. When I return to sports my (injury) will be 100% ready					
57. I am in control of my success in my sport					
58. I cannot perform at the same level of athletics as before my injury					
59. I will control whether I am successful in sport after my injury					
60. I am sure that I have worked hard enough to heal my injury					
61. There is no way to make a full recovery after my injury					

		I	II	III	IV
62. I understand that I have taken the necessary steps to return my sport without re-injury					
63. It is not possible to recover with the injury that I have					
64. I can control whether or not I can perform at the level of sport I was able to before the injury					
65. I am concerned that I will not recover from this injury					
66. I will be able to make a full recovery from my injury					
67. I have the ability to be just as good or better than before my injury					
68. While engaging in therapy my injury will heal					
69. If I fully engage in the sport my (injury) will occur again					
70. The fate of my success after return to sport is based on my therapist's ability					
71. I will re-injure myself again in the same way if I do the same skill I did to injure it the first time					
72. I am concerned that I will not be able to control my success in the sport after injury					
73. I am concerned my injury is too hard to overcome					
74. If I work hard enough I can control my progression in the sport after injury					
75. I feel comfortable that my (injury) will hold up against opponents					



# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Appendix B**

### **Summary of Face Validity Items**

SUMMARY OF FACE VALIDITY ITEMS

<u>Categories</u>	<u>Conceptual Definition</u>
VI. Fear of Re-injury	Athlete's thoughts that returning to sport will result in another or the same injury
VII. Confidence in Return to Sport	Athlete's belief of his/her ability to return to sport
VIII. Athletic Self Concept	Athlete's view of his /her ability to perform specific skills to be successful in sport
IX. Sense of Control	Athlete's view of his/her ability to be in control of their own actions when returning to sport
X. Expectancy of Recovery	Athlete's belief of ability to make a full recovery with physical rehabilitation after an injury

Direction Provided to Raters

Rating Items

- B. Please circle the Roman numeral corresponding with the category that you believe the item best fits.

		I	II	III	IV	V
1. I am confident that my injury is healed	F %		3 75		1 25	
2. I am concerned about the level of ability I have returning to sport	F %		2 50	1 25		1 25
3. I will be able to get through my injury	F %			2 50	2 50	
4. I am concerned that the skills in my sport are too demanding for my injury	F %	1 25		2 50	1 25	
5. I am sure I am ready to engage in my sport again	F %		4 100			
6. With work I can do all the skills I was able to do before my injury	F %		1 25		2 50	1 25
7. I am able to perform all the skills I was able to do before I was injured	F %		1 25	2 50	1 25	

		I	II	III	IV	V
8. Some skills will require too much time to relearn since the break from sport due to injury	F %			4 100		
9. I expect to make a full recovery from my injury	F %					4 100
10. With work I will be able to return to sport at the same level I was before	F %		2 50		1 25	1 25
11. I am afraid that I will have the same injury because I am not ready to go back to competition	F %	4 100				
12. I will be successful in my sport because I will be able to relearn my skills and more	F %		1 25	2 50		1 25
13. If I complete all of my physical therapy my (injury) will not be a factor when I return to sports	F %					4 100
14. With rehabilitation I will not be able to fully recover from my injury	F %	1 25				3 75
15. I am not going to be 100% when I return to my sport	F %			2 50		2 50
16. I expect that my injury is not everlasting	F %		1 25	1 25		2 50
17. I will be able to relearn my toughest and hardest skills with practice after I return to sport	F %			1 25	3 75	
18. I understand that physical therapy is an essential part of returning to 100% function	F %					4 100
19. My sport requires high quality skills that I will not be able to perform again	F %			4 100		
20. Some skills will be easy for me to complete after return from injury	F %			3 75	1 25	
21. I will be an asset to my team because I will be able to return to sport as good as before	F %		1 25	2 50	1 25	
22. I am afraid that I will have the same injury again if I continue with the sport	F %	4 100				
23. I will be able to make a full recovery from my injury	F %	2 50		1 25	1 25	
24. My injury will get in my way for the rest of my life	F %	4 100				

		I	II	III	IV	V
25. It will be easy to fall back in line with my sport	F %		3 75		1 25	
26. Even if I go to rehabilitation as often as recommended I will not be 100%	F %	1 25	2 50			1 25
27. I must continue do my exercises because my (injury) is likely to happen again	F %	4 100				
28. I must always remember that I have an injury when I am engaging in sports	F %	4 100				
29. I can control my actions on the field	F %				4 100	
30. My injury does not define my future ability to complete skills in my sport	F %				4 100	
31. It will be a challenge but I will be able to return to the level of sport as before the injury	F %		2 50		2 50	
32. I am afraid that if I play as hard as I did before my injury will happen again	F %	2 50		2 50		
33. I do not have control over how I perform in sports	F %		1 25	1 25	2 50	
34. I will be able to complete all of the skills I have performed before my injury	F %	1 25		2 50		1 25
35. I am confident that I can play my sport without sustaining the same injury	F %		2 50			2 50
36. I will never be able to perform certain skills again due to my injury	F %			4 100		
37. I can be successful if I engage in therapy to successfully return to sport	F %					4 100
38. My injury will not limit my ability to perform all skills when I return	F %			4 100		
39. It will be a challenge to return to the level of sport I was at before	F %		2 50	1 25	1 25	
40. I will not be able to perform all skills that I used to before my injury	F %			4 100		
41. I will never be the same athlete I was before	F %		1 25	3 75		
42. I am concerned that my skills will all have to be changed when I return to sport because of my injury	F %		2 50	2 50		

		I	II	III	IV	V
43. I will be in therapy until I make a full recovery	F %					4 100
44. If I go back to sports I will risk the same injury again	F %	4 100				
45. I will be able to perform all the skills I used to when I return to sport after injury	F %		2 50	1 25	1 25	
46. My therapy is designed to help me make a full recovery	F %					4 100
47. My coaches will determine if I can play well after sport	F %		2 50		2 50	
48. I believe that no matter how hard I work I will not be at the same caliber as I was before	F %		1 25	3 75		
49. My coaches are the reason for my success in sports with or without an injury	F %				4 100	
50. It will be extremely difficult to return back to the level of sport I performed at before	F %			2 50	2 50	
51. I will be just as good as I was when I return to sport	F %		2 50	1 25	1 25	
52. The most important part to my success in sport after injury is my coaches	F %				4 100	
53. I will only succeed with the support of my teammates after injury	F %				4 100	
54. I am at risk of an injury because I cannot control what happens when I am playing my sport	F %	2 50		1 25	1 25	
55. The most important factor to my success in sports after an injury is my therapist	F %			1 25	1 25	2 50
56. When I return to sports my (injury) will be 100% ready	F %		2 50	1 25		1 25
57. I am in control of my success in my sport	F %				4 100	
58. I cannot perform at the same level of athletics as before my injury	F %			4 100		
59. I will control whether I am successful in sport after my injury	F %		1 25		2 50	1 25
60. I am sure that I have worked hard enough to heal my injury	F %				4 100	

		I	II	III	IV	V
61. There is no way to make a full recovery after my injury	F %		1 25		1 25	2 50
62. I understand that I have taken the necessary steps to return my sport without re-injury	F %		1 25		2 50	1 25
63. It is not possible to recover with the injury that I have	F %		2 50		1 25	1 25
64. I can control whether or not I can perform at the level of sport I was able to before the injury	F %				4 100	
65. I am concerned that I will not recover from this injury	F %				1 25	3 75
66. I will be able to make a full recovery from my injury	F %		1 25		1 25	2 50
67. I have the ability to be just as good or better than before my injury	F %		1 25	1 25	1 25	1 25
68. While engaging in therapy my injury will heal	F %					4 100
69. If I fully engage in the sport my (injury) will occur again	F %	4 100				
70. The fate of my success after return to sport is based on my therapist's ability	F %	1 25	2 50			1 25
71. I will re-injure myself again in the same way if I do the same skill I did to injure it the first time	F %	3 75			1 25	
72. I am concerned that I will not be able to control my success in the sport after injury	F %		1 25		2 40	1 25
73. I am concerned my injury is too hard to overcome	F %		1		2 50	1 25
74. If I work hard enough I can control my progression in the sport after injury	F %				4 100	
75. I feel comfortable that my (injury) will hold up against opponents	F %		1 25	1 25	2 50	

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Appendix C**

### **Questionnaire Categories**

QUESTIONNAIRE CATEGORIES

Category 1: Fear of Re-injury

<u>Item #</u>	<u>Item Stem</u>
69	If I fully engage in the sport my (injury) will occur again
27	I must continue do my exercises because my (injury) is likely to happen again
32	I am afraid that if I play as hard as I did before my injury will happen again
44	If I go back to sports I will risk the same injury again
22	I am afraid that I will have the same injury again if I continue with the sport
71	I will injury myself again the same way if I do the same skill I did to injure it the first time
11	I am afraid that I will have the same injury because I am not ready to go back competition

Category 2: Confidence in return to sport

<u>Item #</u>	<u>Item Stem</u>
5	I am sure I am ready to engage in my sport again

Category 3: Athletic Self Concept

<u>Item #</u>	<u>Item Stem</u>
36	I will never be able to perform certain skills again due to my injury



- 40 I will not be able to perform all skills that I used to before my injury
- 38 My injury will not limit my ability to perform all of my skills when I return
- 19 My sport requires high quality skills that I will not be able to perform again

Category 4: Sense of Control

<u>Item #</u>	<u>Item Stem</u>
29	I can control my actions on the field
57	I am in control of my success in my sport
74	If I work hard enough I can control my progression in the sport after injury
72	I am concerned that I will not be able to control my success in the sport after injury
64	I can control whether or not I can perform at the level of sport I was able to before the injury

Category 4: Sense of Control

(Continued)

<u>Items #</u>	<u>Item Stem</u>
49	My coaches are the reason for my success in sports with or without an injury
52	The most important part to my success in sport after injury is my coaches
59	I will control whether I am successful in sport after my injury

Category 5: Expectancy to Recovery

<u>Item #</u>	<u>Item Stem</u>
68	While engaging in therapy my injury will heal
9	I expect to make a full recovery from my injury
46	My therapy is designed to help me make a full recovery
43	I will be in therapy until I make a full recovery

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Appendix D**

### **Pilot Study Questionnaire**

PILOT STUDY QUESTIONNAIRE

Please fill out the information below before completing the questionnaire

Age \_\_\_\_\_ Sport Played \_\_\_\_\_

Level of sport (college, professional, etc) \_\_\_\_\_

How Long ago was the injury? \_\_\_\_\_

Please read the questions carefully. Answer the questions based on how you feel during the rehabilitation program while attempting to return to your sport. Circle 1-5 for strongly disagree (1) to strongly agree (2) for the answer that most accurately describes how you feel.

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
1. If I fully engage in the sport my injury will occur again	1	2	3	4	5
2. I expect to make a full recovery from my injury	1	2	3	4	5
3. My coaches are the reason for my success in sports, with or without an injury	1	2	3	4	5
4. The most important part of my success in sport after experiencing injury, is my coach	1	2	3	4	5
5. I will never be able to perform certain skills again due to my injury	1	2	3	4	5
6. My sport requires high quality skills that I will not be able to perform again because of my injury	1	2	3	4	5
7. I can control my actions on the field/court/in the gym	1	2	3	4	5
8. I can control whether or not I can perform at the level of sport I was able to before my injury	1	2	3	4	5

9. I am sure that I am ready to engage in my sport again	1	2	3	4	5
10. My therapy is designed to help me make a full recovery	1	2	3	4	5
11. I must continue to always do my exercises because my injury is likely to happen again	1	2	3	4	5
12. I am afraid that if I play as hard as I did before, my injury will happen again	1	2	3	4	5
13. If I go back to sports I will risk the same injury again	1	2	3	4	5
14. I will not be able to perform all of the skills that I used to perform before my injury	1	2	3	4	5
15. My injury will not limit my ability to perform all of my skills when I return	1	2	3	4	5
16. I am in control of my success in my sport	1	2	3	4	5
17. While engaging in therapy my injury will heal	1	2	3	4	5
18. I am afraid that I will have the same injury again if I continue with the sport	1	2	3	4	5
19. If I work hard enough I can control my progression in the sport after injury	1	2	3	4	5
20. I am concerned that I will not be able to control my success in the sport after injury	1	2	3	4	5
21. I will control whether I am successful in sport after my injury	1	2	3	4	5
22. I will injure myself again the same way if I do the same skill I did to injury it the first time	1	2	3	4	5
23. I will be in therapy until I make a full recovery	1	2	3	4	5
24. I am afraid that I will have the same injury because I am not ready to go back to competition	1	2	3	4	5

# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Appendix E**

### **Frequency Table for Pilot Study**

FREQUENCY TABLE FOR PILOT STUDY

Please fill out the information below before completing the questionnaire

Age\_\_\_\_\_ Sport Played\_\_\_\_\_

Level of sport (college, professional, etc)\_\_\_\_\_

How Long ago was the injury?\_\_\_\_\_

Please read the questions carefully. Answer the questions based on how you feel during the rehabilitation program while attempting to return to your sport. Circle 1-5 for strongly disagree (1) to strongly agree (2) for the answer that most accurately describes how you feel.

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)	
1. If I fully engage in the sport my injury will occur again	27	33	84	16	10	170
2. I expect to make a full recovery from my injury			4	53	113	170
3. My coaches are the reason for my success in sports, with or without an injury	12	18	27	45	68	170
4. The most important part of my success in sport after experiencing injury, is my coach	13	82	27	17	31	170
5. I will never be able to perform certain skills again due to my injury	70	18	28	54		170
6. My sport requires high quality skills that I will not be able to perform again because of my injury	41	29	26	54	20	170
7. I can control my actions on the field/court/in the gym			22	59	89	170
8. I can control whether or not I can perform at the level of sport I was able to before my injury		33	18	23	96	170

		I	II	III	IV	V
9. I am sure that I am ready to engage in my sport again		11	36	37	86	170
10. My therapy is designed to help me make a full recovery		7	19	35	109	170
11. I must continue to always do my exercises because my injury is likely to happen again	14		56	43	57	170
12. I am afraid that if I play as hard as I did before, my injury will happen again	65	51	25	13	16	170
13. If I go back to sports I will risk the same injury again	42	47	43	38		170
14. I will not be able to perform all of the skills that I used to perform before my injury	45	33	37	48	7	170
15. My injury will not limit my ability to perform all of my skills when I return		23	36	42	69	170
16. I am in control of my success in my sport	13		23	11	123	170
17. While engaging in therapy my injury will heal		1	23	57	89	170
18. I am afraid that I will have the same injury again if I continue with the sport	17	34	67	25	27	170
19. If I work hard enough I can control my progression in the sport after injury		10	18	38	104	170
20. I am concerned that I will not be able to control my success in the sport after injury	82	50		30	8	170
21. I will control whether I am successful in sport after my injury	18	14	27	13	98	170
22. I will injure myself again the same way if I do the same skill I did to injury it the first time	47	60	12	13	38	170
23. I will be in therapy until I make a full recovery		41	10	68	51	170
24. I am afraid that I will have the same injury because I am not ready to go back to competition	54	35	47	11	23	170



# READINESS TO RETURN TO SPORTS QUESTIONNAIRE

## **Appendix F**

### **Final Instrument**

FINAL INSTRUMENT

Please fill out the information below before completing the questionnaire

Age\_\_\_\_\_ Sport Played\_\_\_\_\_

Level of sport (college, professional, etc)\_\_\_\_\_

How Long ago was the injury?\_\_\_\_\_

Please read the questions carefully. Answer the questions based on how you feel during the rehabilitation program while attempting to return to your sport. Circle 1-5 for strongly disagree (1) to strongly agree (2) for the answer that most accurately describes how you feel.

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
1. I expect to make a full recovery from my injury	1	2	3	4	5
2. My coaches are the reason for my success in sports, with or without an injury	1	2	3	4	5
3. The most important part of my success in sport after experiencing injury, is my coach	1	2	3	4	5
4. I will never be able to perform certain skills again due to my injury	1	2	3	4	5
5. I can control my actions on the field/court/in the gym	1	2	3	4	5
6. I can control whether or not I can perform at the level of sport I was able to before my injury	1	2	3	4	5
7. I am sure that I am ready to engage in my sport again	1	2	3	4	5
8. My therapy is designed to help me make a full recovery	1	2	3	4	5

		I	II	III	IV
9. I am afraid that if I play as hard as I did before, my injury will happen again	1	2	3	4	5
10. If I go back to sports I will risk the same injury again	1	2	3	4	5
11. I will not be able to perform all of the skills that I used to perform before my injury	1	2	3	4	5
12. My injury will not limit my ability to perform all of my skills when I return	1	2	3	4	5
13. I am in control of my success in my sport	1	2	3	4	5
14. While engaging in therapy my injury will heal	1	2	3	4	5
15. I am afraid that I will have the same injury again if I continue with the sport	1	2	3	4	5
16. If I work hard enough I can control my progression in the sport after injury	1	2	3	4	5
17. I am concerned that I will not be able to control my success in the sport after injury	1	2	3	4	5
18. I will control whether I am successful in sport after my injury	1	2	3	4	5
19. I will injure myself again the same way if I do the same skill I did to injury it the first time	1	2	3	4	5
20. I am afraid that I will have the same injury because I am not ready to go back to competition	1	2	3	4	5