

The Importance of Psychosocial Considerations in the Injury Rehabilitation of Elite Athletes

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Abstract

The psychological and emotional impact of sustaining a long-term injury to elite athletes demonstrates the need for an improved rehabilitative approach in sports medicine. Sports medicine is a healthcare profession that requires regular interaction with other people, specifically athletes, medical training as well as knowledge of human and sport psychology. Within the current model of sports rehabilitation practices, decisions pertaining to the timeline and progression of elite athletes' recovery are based primarily on the physical damage from injury. Unfortunately, the focus often remains solely on the physical injury, disregarding an athlete's psychosocial responses, which limits sports medicine professionals' ability to provide holistic care. The rehabilitation of long-term injuries of elite athletes necessitates an aggressive approach, which demands significant commitment and effort by both the sports medicine staff and athlete over an extended time period. There are many factors that are involved and must be considered during this process; however, the importance of the psychosocial considerations tend to be overlooked. Thus, there is a gap present in the rehabilitation process that limits elite athletes' ability to confidently return to sport physically, emotionally and psychologically.

The Importance of Psychosocial Considerations in the Injury Rehabilitation of Elite Athletes

An athlete has many experiences during his or her career, including strong social relationships, recognition, enjoyment of competing as well as increased knowledge and skill mastery (Gardner & Moore, 2006). An athlete's experience may also include transitions in and out of competition, especially considering injuries are an inevitable part of most athletic careers. For elite athletes, those who compete at a high national level for their age group (von Rosen, Heijne, Frohm, Fridén & Kottorp, 2018), including varsity, professional and international athletics, it is suggested that the risk and prevalence of injury is three to five times higher than the general population (van Hilst et al., 2015), with a significant amount being musculoskeletal and head or concussion injuries. When such injuries do eventually occur, the transition can be a very stressful experience, especially for elite athletes whose sport is central to their lifestyle and personal identity. For years, elite athletes have dedicated a substantial amount of time and energy to their sport and with their team, which collectively contributes to the development of a strong athletic identity. These athletes have an established self-schema for how they perceive themselves and want others to identify them. Thus, during this transition, one's status and mentality as an athlete can be very difficult to separate from due to injury. Similarly, athletes may find themselves experiencing a wide variety of thoughts, emotions and behaviors as they react and progress through the rehabilitation process. Thus, despite all of the hardships an athlete has overcome in their career for athletic success, it is during the rehabilitation process where they are truly tested and require treatment that will aid in their ability to recover, physically, emotionally and psychologically.

Elite Athletes and Long-Term Athletic Injuries

A substantial amount of evidence supports the health benefits as a result of participation in sport. Additionally, there is research that reveals the increased risk of injuries associated with the excessive practice of sport and those obtained during competition, especially at highly competitive levels (Lemoyne, Poulin, Richer & Bussières, 2017). As previously stated, most athletic injuries obtained by elite athletes are musculoskeletal or concussion-related injuries. While the event and nature of obtaining a musculoskeletal injury varies among different sports, it is difficult to establish specific mechanisms as many injuries are due to a combination of factors. The most frequently mentioned factors are those related to training and sport specific characteristics such as overtraining, insufficient muscle strength, lack of rest, movements inherent to the particular sport (change of direction, deceleration, jumping, physical contact) and repetitive movements (Saragiotto, Di Pierro & Lopes, 2014). Generally, musculoskeletal injuries occur when the musculoskeletal structures exceed the ability of adaptation (Saragiotto et al., 2014), in other words the musculoskeletal structures are overextended and unable to withstand the physical demands placed upon them. Thus, athletic and sport-related injuries for most athletes are inevitable. Sprains, strains, tears of the ligaments and tendons, dislocated joints and fractured bones are common musculoskeletal injuries that vary in severity, physical limitations and therefore type and length of treatment as well. While many of the injuries inflicted by the participation in sport and physical activity lend themselves to quick rehabilitation, nearly 1 in 6 athletes in the United States will sustain an athletic injury severe enough to result in time loss from competition (Roh & Perna, 2000). For example, anterior cruciate ligament tears are injuries that will require surgery and extensive rehabilitation treatment. Usually, recovery after a

reconstruction surgery takes about nine months; however, it may take eight to twelve months or more before elite athletes will be able to return to their sport and high level of competition. In comparison, bone fracture injuries, depending on the severity range in recovery time. Compound fractures, in which a bone is broken in several places may require surgery to stabilize the bone and as many as eight months to heal. On the other hand, simple fractures generally take six weeks to heal, depending on the age of the athlete, previous history, type and location of the break. Overall, the nature of the injury and related stressors have a significant impact on an elite athlete's ability to transition from sport to rehabilitation, especially if the seriousness and length of recovery could lead to the ending of an athletic career.

Acculturation

Elite athletes understand the culture of sport. The expectations of their participation in high-level competition including the level of commitment, physical demands, schedule, understanding and respect for authority figures are well-known and expected. Thus, elite athletes rely on the consistency of this foundation of the sport culture for organization and structure of routines. Additionally, the culture promotes the mindset of having a sense of control in regard to personal improvement. Within this normative culture, elite athletes realize that they are expected to be prepared, focused on their sport and able to overcome adversity, which at times means being able to train and play through pain and injury (Wiese-Bjornstal, 2010). As a result, an overlooked stressor for injured athletes is the transition from the familiarity of the sport, performance-based culture into the rehabilitation culture, a shift referred to as acculturation (Prentice, 2010).

Athletic injuries are unanticipated events, so the realization of not being able to compete for a prolonged period of time can be very difficult to adjust to. Additionally, elite athlete's trained behaviors from their understanding of sport culture differ from what is necessary to be successful in the clinical environment and rehabilitation process. For example, pain becomes a prominent factor, defined and used differently in the rehabilitative setting than in competition and training. Elite athletes are accustomed to persisting through the discomfort or exhaustion of competing in their sport; however, clinically, pain is used as an indicator and response to injury. Similarly, elite athletes who become expectant of receiving instant feedback are instead told to wait in order to see how their body reacts to treatment. Improvement, progress and success are quantitatively measured in in sport-specific performance and accomplishments such as amount of playing time, points or personal records; however, in rehabilitation, success is measured in terms of how something feels and according to a scale (Prentice, 2010). As a result of the combination of such key differences, during the acculturation process athletes must adjust their expectations, giving up their sense of control and understanding of physiological, sport-related timelines to the perspectives of the rehabilitation process.

Athletic Identity

Elite athletes are a unique population, comprised heavily of determined individuals characterized by their strong sense of motivation, self-discipline, focus and resiliency in sport. These athletes are committed to their training, demonstrate a desire to succeed and recognize the importance of adversity. Developed through the acquisition of skills, confidence and social interactions during sport, athletic identity plays a significant psychological role in an athlete's life. For years, athletic identity has been defined as the degree to which an individual identifies

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with the athletic role and looks to others for acknowledgement of that role (Brewer, Van Raalte, & Linder, 1993). The status an elite athlete holds on their team as well as the status and recognition an athlete receives within their community can be consuming. There is a natural demand for elite athletes to exceed the expectations placed upon them in today's sports dominated culture, which include those of their coaches, teammates, community as well as an athlete's own personal expectations. Being an athlete, especially at the elite level, gives individuals a sense of purpose and requires that they are always prepared physically, mentally and emotionally for their sport. Comparably, for similar reasons, in the clinical setting, the elite athlete population may often be perceived as an ideal group of patients to work with considering the length of their career, acquired attributes and natural desire to return to competition as soon as possible. Still, this elite athlete status can also be detrimental to the athlete's ability to transition when they suffer a long-term, potentially career-ending injury. As a result, it is important for athletes, coaches and sports medicine staff to be aware of both the benefits and potential risks of athletes who exhibit a strong athletic identity.

There are positive correlates associated with having a strong athletic identity. Considering it is present in most elite athletes, athletic identity leads to a strong sense of self, increased confidence and self-discipline. Athletes with a strong athletic identity have also reported experiencing an increase in overall sport performance. This is supported by the impression that elite athletes tend to be more committed to their sport and spend years working towards their sport-specific goals. Accustomed to structure, they often allocate and arrange time for social events around their sport-related routines, which may result in turning down social invitations. This conversely may lead athletes to neglect other parts of their lives in order to

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fulfill their athletic role and responsibilities in addition to achieving their desired level of performance. The identification as an athlete has quickly become a lifestyle as elite athletes rely on their athletic schedules for organization, heavily influenced by competition, practice and training days. In addition to engaging in daily tasks and responsibilities, the recognition and encouragement athletes receive based on their participation and success in sport reinforces their athletic identity (Poucher & Tamminen, 2017).

Conversely, there is a potentially unhealthy attachment to their athletic identity and lifestyle that elite athletes exhibit. Many of the negative characteristics associated with this stronger level of athletic ability and identity are experienced when an athlete must undergo a transition out of their sport. Throughout an athlete's career, they will experience periods of transition that may take them away from their daily routines such as retirement, being cut from a team or long-term injury. If an elite athlete identifies too closely with their role as an athlete, it can make coping with these transitions more difficult as they battle separating themselves from who they are in sport. As a result, elite athletes may be more vulnerable to experiencing deficiencies in both emotional and physical health, depression, feelings of isolation in addition to requiring a greater degree of psychological adjustment to cope with the transition out of their sport (Brewer et al., 1993). For injured athletes specifically, being sidelined, watching teammates continue to participate and compete is a difficult experience. Those who are side-lined for prolonged periods of time often start to develop an array of negative feelings as they face reminders of their perceived or real loss of fitness and a strengthened belief that they are letting their team down simply by virtue of watching practice (Tracey, 2003). Internal cognitions such as frustration, helplessness, worry and concern about the time lost from training and

participating, what the injury means for the rest of the competitive season and future plans has a strong influence emotionally and psychologically. In other words, statistically, for athletes with strong athletic identity the reality of facing injuries has been associated with higher perceived stress levels and lessened life satisfaction (Lattimore, 2017). As a result, characteristics such as the resiliency, self-discipline, motivation and willingness to persist through adversity of a strong athletic identity could also be considered possible risk factors for exercise dependence and cause rehabilitation overadherence of long-term, injured athletes (Mastnak, 2018). Therefore, while athletic identity may be an adaptive strategy to help athletes as they transition, their ability to do so and cope with the change more effectively may be more difficult if the cause for the change is sudden.

Emotional Response and Reaction to Injury

From the onset of injury and throughout the rehabilitation process, it is important to recognize the wide range of emotional reactions an injury can trigger. Elite athletes will respond to injuries uniquely and in a variety of ways, which are influenced by a range of personal (personality, coping resources, and previous history of stressors) and situational (sports medicine team influences) preinjury factors (Clement, Arvinen-Barrow & Fetty, 2015). Long-term, severe injuries are often the most difficult to come to terms with as a result of the prolonged period of inactivity, decreased involvement in sport or team related activities and the slowed progress of an injury's physical rehabilitation. Thus, in many cases, elite athletes' initial responses to such injuries tend to be negative.

Shock is usually seen within the first few hours after an athlete has been injured. Elite athletes may appear confused, uncertain, or even deny that they are injured; however, the realization phase that follows is when an athlete will start to admit that something is wrong (Tunick et al., 2002). At this point, athletes may experience an overwhelming sense of fear before moving into a period of anger considering the uncertainty of their situation and future in sport. During the realization and mourning phase, elite athletes begin to fully understand their injury as well as its implications and a common theme of perceived injury severity will strongly influence their cognitive appraisals. The more an athlete's personal assessment of an injury was perceived as serious, expected to be away from sport for a significant period of time and devastating in nature, the more their emotional response is likely to be highly negative (Clement et al., 2015). Anger is an emotional release and provides the athlete an opportunity to react to the situation, which will often influence the ways in which they behaviorally react to transition and rehabilitation in general. On the other hand, elite athletes who demonstrate a more optimistic, hopeful outlook of their injuries evaluated their injury more positively. A study conducted by Clement et al. (2015), emphasized that athletes' reactions to their injuries initially manifested in two distinct phases: initial reaction and reaction after diagnosis. Thus, as an athlete becomes more aware of the details of their injury and its severity, their response, depending on the diagnosis, is likely to change, marking the first major point of change in the initial appraisals.

Sports Medicine and Long-Term Injury Rehabilitation

The style of rehabilitation is considerably different in a sports medicine environment taking into account the competitive nature of athletics, which necessitates an aggressive approach. The competition season for most sports is relatively short; however, little can be done

to speed up the healing process physiologically. Consequently, the sports medicine team, specifically the athletic trainer tends to play games with the healing process. At best, an athletic trainer is able to create an environment conducive to the healing process while walking a thin line between being aggressive yet cautious in regard to the status of the athlete as well as the injury (Prentice, 2010). With that, it is important for the athletic trainer to reinforce to the athlete and sports performance related staff that returning to play too quickly could result in a season- or career-ending injury.

When elite athletes suffer injuries, the sports medicine team are trained to automatically diagnose and treat the physical aspects of the injury (Arvinen-Barrow & Clement, 2017). Traditionally, athletic trainers and physical therapists have used rehabilitation programs designed and separated into three physiologic phases: acute injury phase, repair phase and remodeling phase. These phases, which are based on the stages of the healing process, provide a blueprint for guiding treatment, using modalities, and implementing rehabilitation exercises (Clement et al., 2015). The use of these stages has also been effective in assisting injured athletes' return to their sport as they transition through phases of varying degrees of knowledge, physical ability and program planning as it relates to their injury diagnosis and rehabilitation. Decisions pertaining to the timeline and progression of a rehabilitation program are based primarily on the process of injury healing and anything that interferes with this process would likely increase the length of time required for rehabilitation (Prentice, 2010). Unfortunately, the focus often remains solely on the physical site of injury, overlooking an athlete's emotional and psychological responses to the event of being injured, which could be perceived as a major event in an athlete's career. While elite athletes possess a physical intelligence that enables them to be more active in the

rehabilitation process compared to general medical patients (Prentice, 2010), athletes will experience a collection of stressors as well as emotional and psychological responses that they must learn to cope with.

Psychosocial Considerations in the Rehabilitation Process

As previously mentioned, sports medicine professionals often focus on the physical damage from injury, while ignoring the psychosocial aspects, which limits their ability to provide holistic care. With that being said, evidence suggests that athletic trainers do recognize the prevalence and demonstrate a desire to better address and aid athlete's psychosocial response; however, they consider themselves to be ineffective in doing so. Athletic trainers believe their professional training lacks education on how to appropriately deal with these responses, which limits their ability to properly incorporate athletes' reactions into their treatment plans (Clement et al., 2015). Thus, there is a gap between wanting to implement psychological strategies and having the knowledge to successfully do so that is currently overlooked in sports medicine and the rehabilitation process.

The Educational Period

As elite athletes enter the rehabilitation process following an injury, there tends to be a variety of uncertainties and cognitive appraisals mainly concerned with thoughts questioning the rehabilitation process. In order to address these doubts and potential concerns effectively, the process of acculturation emphasizes the need for the sports medicine team to focus heavily on patient education. From the athlete's perspective, a common emotional response to rehabilitation is frustration and athletes may be faced with motivational challenges, which emphasizes a theme of mixed cognitive appraisals associated with thoughts about the perceived value of their

rehabilitation programs, willingness to trust and continue with the process, and the perceived difficulty of these programs (Clement et al., 2015). These feelings often influence the ways in which athletes react behaviorally to rehabilitation. Thus, in the same way elite athletes recognize that they cannot begin a competition season competing at a championship level, this understanding needs to be addressed by the sports medicine staff and carried over into the rehabilitation culture. So, following a severe injury requiring extensive rehabilitation treatments, athletes should not expect to begin the recovery process with hopes of being able to participate in regular training regimens, practice or competition straightaway.

Often times, an athlete may feel caught between their coach and medical staff, balancing the different expectations of their recovery from both perspectives. Both authorities need to recognize that they want the same thing for their athlete, which is to successfully see them through the rehabilitation process and returned to play as quickly as possible. With that, it is important that the coach remain involved in the decision-making process collectively with the sports medicine staff, athlete and when appropriate, the athlete's parents. Together negotiating what the athlete can and cannot do safely in the course of a practice, team activities or training (Prentice, 2010). Nonetheless, it is important for the athletic trainer to help the athlete and sports performance related staff realize that a return to play too quickly could result in a season- or career-ending injury. Establishing trust as well as close communication and personal sports medicine staff-athlete, sports medicine staff-coach relationships is essential during this first period of the rehabilitation process. Athletic trainers are concerned for an elite athlete's long-term athletic success and physical health in addition to their short-term ability to return to play, which may not always be shared, leading to possible conflicts with the perspectives of a coach.

Often times, a coach is more focused on the team's success, which increases their desire to have all of their athletes back as soon as possible. Additionally, this perspective may conflict with the athletic identity of the athlete who wants to get back to doing what they love to do as soon as and however possible. Thus, throughout this educational phase of the rehabilitation process, establishing trust is an essential factor for success. Athletes and coaches who truly trust their athletic trainer are more likely to appreciate that the athletic trainer is working in a way with an athlete's best interest at heart. This includes being an advocate not only for the athlete's return to play but for long term healthy, athletic success.

Regular and honest communication also helps the sports medicine team ability to better understand an athlete's mental status including the thoughts, feelings and conflicting behaviors they have about an injury. This is significant information for the sports medicine team to be able to provide an effective rehabilitation program, tailored to the preferences of the athlete. This close communication also allows athletes to be more involved as active members of their recovery and rehabilitation process. As a result, the sports medicine team may choose to spend majority of the educational phase addressing what needs to be done and the future outlook rather than fixating on what caused the injury; however, this is not to suggest that the athletes would not be interested in such details. Overall, the intentional implementation and focus of the educational phase is significant but does not guarantee to increase adherence. Still, without this preliminary step, treatment adherence may be undermined.

Compliance and Adherence

An athlete's compliance and adherence to treatment regimens and the rehabilitative culture continues to be a complex issue. Adherence is a term used to emphasize exercise

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discipline and active, voluntary choice are used interchangeably in the sports medicine environment, whereas compliance is the obedience of an athlete to the physician or athletic trainer's instruction, and (Prentice, 2010). Previous research on athletic injury rehabilitation illustrates that rehabilitation adherence can be understood in terms of the personality and character traits of the injured athlete, characteristics of the rehabilitation setting in addition to the importance of the previously discussed development of the athletic trainer-athlete relationship (Prentice, 2010). Initial adherence is often determined by an elite athlete's first impression of their injury, sports medicine staff as well as the clinical environment and rehabilitative culture. It has been observed that athletes who endure a severe injury requiring prolonged rehabilitation, such as following a torn anterior cruciate ligament and surgery, are usually the most compliant to their programs in the first nine weeks of therapy (Campbell, Evans, Tucker, Quilty, Dieppe & Donovan, 2001). In order for athletes to adhere to their programs, they need to feel and trust that the rehabilitation is going to be successful. During this initial adherence phase, athletes should feel comfortable in expressing their viewpoints, voicing their opinions of the effectiveness of the treatment strategies being used (Campbell et al., 2001). Considering the athlete is the one going through the injury rehabilitation, their input is vital to foreseeing their ability to adhere to the rehabilitation process successfully. Continued adherence may be challenging to achieve as rehabilitation will cause unfamiliar degrees of pain and discomfort among other stressors that athletes must learn how to effectively respond to. This is particularly significant for athletes whose treatment and recovery take longer than expected. If they believe the prescribed interventions are not effective, athletes' motivation to adhere to the protocol is likely to decrease (Campbell et al., 2001). Additionally, clinics and training rooms that are well-run, organized,

convenient for the athlete to access and have an easy scheduling process encourage adherence to the rehabilitation process.

In opposition to adherence, non-adherence can result in a loss of progress made through therapy and treatment, thus extending the rehabilitation process and delaying an athlete's return to sport. Recent evidence suggests that an athletes' failure to adhere to prescribed treatment protocols may also reflect overadherence. This is a term used to describe the attempt of athletes to do too much too quickly, failing to obey the activity restrictions placed upon them throughout their rehabilitation program, or demonstrate excessive efforts to push through harmful pain symptoms (Podlog et al., 2013). Thus, during the initial review of both the athlete and the injury, it is especially important for sports medicine staff, particularly athletic trainers to recognize the difference between an athlete's initial adherence and their continued compliance.

Coping

After experiencing an injury, an elite athlete must learn to manage their responses considering one's cognition and emotions influence their behavior during the rehabilitation process (Covassin et al., 2015). There are several changes an elite athlete may experience in response to their injury in their social, educational, financial, personal and physical lives. As an athlete begins to acknowledge and accept the reality of their injury as well as the related losses, they are able to more effectively work toward coping with the transition from sport to rehabilitation. Coping is encountered when the athlete is ready to progress forward, leaving the incident of their injury behind them. Traditionally defined as "a process of constantly changing cognitive and behavioral efforts to manage specific internal demands or conflicts" (Lazarus, 1993), coping is the process in which an individual learns to handle a stressful situation. While it

is not uncommon for an athlete to revisit previous phases of their psychosocial response, recalling their initial thoughts and feelings associated with the injury, the prevalence of this is reduced once they identify positive, productive and personal coping mechanisms. During the rehabilitation process, coping practices have been found to be one of the most influential factors to assist elite athletes endure their transition out of a sport and into the clinical environment (Gardner & Moore, 2006). Coping is a dynamic process considering the implementation of one or more behavioral- and mental-coping strategies are used by athletes who experience injury to cope more efficiently. Some of these strategies that elite athletes utilize include acceptance, planning and goal setting, behavioral disengagement, denial, humor, mental disengagement and seeking social support. While research has been conducted to examine various coping strategies in athletes who have experienced injury and the rehabilitation process, little has been found on how athletic trainers can incorporate different coping strategies into their practice or how elite athletes handle a long-term, potentially career ending injury. For the purpose of this thesis, seeking social support and goal setting will be discussed as two significant positive coping strategies that can be encouraged by sports medicine staff throughout the rehabilitation process.

Social Support

For most elite athletes, sport has been used as an outlet to vent frustration and stress in their lives (Tracey, 2003), and it became their coping mechanism for everyday life. Now, the elimination of regular sport participation due to a long-term injury poses difficulty for these athletes as an important part of their lives has been temporarily taken away. As a result, athletes are in need of new coping mechanisms to support their ability to physically, psychologically and emotionally progress through the entirety of their rehabilitation process. The most common

behavioral response during the early injury rehabilitation process is seeking social support, specifically from significant others (Clement et al., 2015). Most elite athletes have the self-confidence to adapt to a mild or moderate injury; however, when managing their ability to adapt to more severe long-term injuries, most will require social support, understanding and proper encouragement.

It seems clear that self-motivation is not influential enough to carry athletes through the difficulties and complexities of a long-term injury. The challenge for those around them, especially the sports medicine staff, is to eliminate the negative barriers and accentuate the positive interactions, most importantly social support (Fisher & Hoisington, 1993). Of all factors that impact adherence to long-term rehabilitation programs, there is increased importance for injured elite athletes to feel that they remain an integral part of their team. For some athletes, they choose not to discuss their thoughts and feelings about their injury with their coaches or teammates (Fisher & Hoisington, 1993). Whether or not that is due to an elite athlete's anxiety about their peers' responses to the injury or perception of their performance upon returning from injury, some elite athletes believe athletic trainers can provide higher-quantity and higher-quality social support (Bejar et al., 2019). It is possible that elite athletes do not expect their teammates to understand the physical and psychological difficulties associated with their injury, especially if they have yet to have personal experience with the process. Additionally, teammates and coaches may shy away from addressing the injuries of others or fail to consider the importance of the supportive role they could play in the rehabilitation process. Regardless, a lot of trust and reliance is placed in athletic trainers as the role of sports medicine professionals as a source of social support is amplified. In the sports medicine environment, they are regular people of

contact who are the most intimately involved and assume primary responsibility for the design, implementation and supervision of the athlete and their rehabilitation program (Bejar et al., 2019). While in a position of leadership, it may be expected that athletic trainers would offer support to their injured athletes as part of their responsibilities; however, this does not take away from the importance of their ability to do so purposefully and meaningful. Like any significant and personal relationship, establishing trust and understanding of personalities will take time to grow and develop. Thus, it is important that athletic trainers encourage their injured athletes to stay involved, discussing options an athlete can do safely in the course of a practice, team activities or training.

Goal Setting

Individualized care is a continuation of the previous coping approach considering just as each athlete or injury is unique, the road to and interpretation of a successful recovery is different. The best way to individualize care is through effective communication and goal setting, ensuring that elite athletes feel a sense of control over their care yet not to the point where quality of care is compromised. To fight any of the negative thoughts an elite athlete may experience, goal setting strategies and optimistic future outlooks of the treatment protocol should be explained and referred to by the sports medicine staff, emphasizing the significance of gradual improvement. A recent study that used short, intermediate and long-term goal setting with injured female collegiate tennis players reported an increase in the players' self-confidence, motivation and focus (Vidic & Burton, 2010). Short-term goals may focus on impairments such as decreasing pain and increasing range of motion, whereas long-term goals are directed more toward the end of the rehabilitation process including the functional tests relevant for return to

play. Elite athletes are accustomed to scheduled structure, specificity and approaching situations as a process. While they may not be overly concerned about the length of their rehabilitation sessions, elite athletes value and view their recovery and rehabilitation to the same degree in which they prioritize their training. Considering personal stressors and strategies impact recovery the most, by setting and seeing the progress made towards achieving goals, elite athletes will feel more confident trusting the process despite any obstacles that may interfere. Remember, elite athletes have become expectant of receiving instant feedback, so athletic trainers can utilize this mentality effectively in the rehabilitation culture by improving their athlete's understanding of this gradual improvement concept. Elite athletes will come to notice that their ability to persevere through the emotional and psychological obstacles has improved, better preparing them for a comprehensive recovery and readiness to return to competition. Overall, trust and positivity are essential characteristics that must be maintained throughout the rehabilitation process, especially by athletic trainers who are in a key position to support both the physical and psychosocial recovery of athletes.

Returning to Competition

As an athlete progresses throughout the rehabilitation process, the athlete, coach and sports medicine staff begin to prepare an athlete for transition back into sport culture. This much awaited transition comes with a level of uncertainty about how an athlete will perform after injury and the prolonged time away from team training. Again, elite athletes may encounter a mixture of responses such as self-confidence concerns, fears or anxiety about the possibility of reinjury and the excitement about competing again with their teammates. Such feelings may also be reflected in athlete's behavioral responses including increased cautiousness in their actions as

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they return to play, concerns about the possibility of reinjury and about the need to restart the rehabilitation process (Prentice, 2010).

Elite athletes, coaches, and athletic trainers tend to have different perspectives that qualify an athlete as prepared to return to sport. Flint and Weiss (1992) found that coaches returned players on the basis of apparent physical status and game situation, whereas athletic trainers were more determined to return an athlete to competition according to their injury progression. The important decision in which will assist elite athletes feel the most prepared as they reintegrate themselves into their regular athletic routines and sport culture is the responsibility of the athletic trainer. At this point in the rehabilitation process, after a significant amount of time away from competition, an elite athlete and their coach tend to be more focused on the athlete being eligible to return. As a result, a coach may see that their athlete has physically recovered from their injury, which based on physical assessments and tests is easier to determine; however, often disregard or do not have the patience for athletes to reach a full, comprehensive recovery before being expected to compete. While the coach and athlete may experience continued frustrations with the continued recovery of the injury, the role of the athletic trainer is to determine when an athlete is performing at an optimal level, physically without risk of reinjury and psychologically. The athletic trainer's ability to assist elite athletes as they prepare for the difference between pain and injury in competition following injury treatment will allow athletes to have a clearer perception of their injury and its limitations. As a result, during the return to sport phase of the rehabilitation process, most elite athletes will gain perspective as they reflect back on the lessons learned from the time involved in the

rehabilitation process, which will be transferrable to future experiences in both competition and recovery.

Importance of a Multi-Disciplinary Rehabilitation Approach

Athletic injury rehabilitation is clearly a dynamic and evolving process during which athletes' psychosocial responses vary. Few theoretic studies and models have been established to aid sports medicine staff's ability to treat the cognitive and emotional factors that contribute to rehabilitation outcomes including the Integrated Model of Response to Sport Injury and the unnamed variation of the phase-like approach to rehabilitation suggested by Kamphoff et al. The development of these models, guided by the physical healing process, have the potential to help sports medicine staff develop and implement psychosocial strategies that address some of the psychosocial challenges their athletes may encounter during the recovery process. Additionally, understanding the theory behind psychosocial responses to injury may help promote a more holistic approach in choosing appropriate treatments, options and additional resources to help athletes proceed through each phase and successfully back to their sport. Although these models have suggested a shift toward approaching sports medicine and athletic injury rehabilitation from a physical and psychosocial perspective, research continues to be limited in this area.

Within the current practices of the rehabilitation system, the physical and psychosocial readiness of an athlete to return to sport tend to be disregarded as equal factors. As previous research has concluded, the various psychological and emotional responses including those experienced later in the rehabilitation process such as the fear of reinjury are unique predictors of an athlete's overall recovery. Still, these responses are not always thoroughly considered during rehabilitation and return to play protocols, especially in athletes transitioning from the long-term

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rehabilitation of athletic injuries. As discussed throughout this thesis, there are a number of negative emotional and psychological responses that elite athletes must learn to cope with as they approach full recovery and return to sport. By incorporating specific strategies and services that help improve an athlete's ability to deal with pain, enhance adherence to the rehabilitation process, manage emotions, cope with anxieties, improve focus and build confidence, elite athletes will be in a better position to work through all of the obstacles encountered throughout their rehabilitation process effectively.

It is important that elite athletes know and are assured that the fluctuation of their feelings throughout the injury-recovery process is normal. It is expected that athletes experience wavering thoughts, emotions and behaviors, which at times can be negative. Elite athletes, especially at the collegiate and professional levels also often underreport psychological difficulties, feelings and symptoms as a result of their teammates' or sport-related perceptions. They desperately want to get back to competing as soon as possible, unaware of the other factors that contribute to a healthy, well-prepared transition back into full activity. The continued effect of untreated or unaddressed emotional and psychological responses to injury will continue to impede an elite athlete's ability to confidently compete and focus on their performance in sport.

Throughout the rehabilitation process, athletic trainers should continue to recognize the prevalence of the emotional and psychological effects injury has on elite athletes; however, the importance and necessity of implementing effective treatment strategies cannot be repeatedly overlooked. This gap between wanting to implement psychological strategies and having the knowledge to successfully do so emphasizes the need for a multidisciplinary approach in sports medicine and the injury rehabilitation process. While there are several strategies that can be put

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into effect by athletic trainers and current sports medicine staff members, some athletic trainers have reported desires to have better access to other professionals such as sport psychology consultants to assist in their ability to best serve their athletes. Sport psychology consultants (SPCs) are qualified professionals equipped to support athletes as they prepare psychologically for competition in addition to the mental and emotional demands of their sport (Zakrajsek, Martin & Wrisberg, 2016). As there continues to be a growing emphasis on the importance of addressing psychosocial aspects of athletic injuries, athletic trainers and sports medicine staff need to be honest about what they believe is within their expertise and what is beyond their scope of practice. Arvinen-Barrow, Penny, Hemmings and Corr (2010) stated that the better sports medicine professionals were the ones who could identify what they could affect and know who to refer to if they can't. While there are barriers to such action, such as the stigma that elite athletes have regarding receiving psychological support, athletes may not recognize the benefit of talking with a professional who has studied and understands the psychological effects of injury better than the athlete themselves can describe what they are feeling. Athletes' lack of education regarding the psychological aspects of their severe injuries requiring long-term rehabilitation was felt to negatively influence their recovery (Annear, Sole & Devan, 2019). Overall, there is consensus amongst sports medicine professionals that there is a need for specific psychology education and training. Until that need is met, open communication with athletes and other or new sports medicine team members appears to be central to reducing stigma, as it encourages open conversations about psychological barriers during athletes' return to play and rehabilitation (Annear, Sole & Devan, 2019). These necessary actions by sports medicine staff will ensure that elite athletes can receive the best, comprehensive assessment and treatments

available to them to help them feel fully recovered from injury physically, emotionally and psychologically.

Conclusion

Without the involvement of sports medicine professionals adequately trained and knowledgeable in regard to the psychological factors involved in the injury rehabilitation of elite athletes, there will continue to be a separation between the physical and psychosocial recovery. Athletic injuries are an inevitable experience in most athletic careers; however, when injuries do eventually occur, the transition into a clinical setting and the process of seeking rehabilitative treatment should better accommodate for elite athletes who will require more extensive treatment. While elite athletes may experience a wide range and cyclic manner of thoughts, emotions and behaviors throughout their long-term recovery, when the time comes, they should feel confident in their ability to return to sport physically, emotionally and psychologically. Although this literature review is not a comprehensive collection of all external factors affecting the holistic care of injured athletes or represent the entire scope of every factor that can influence full physical and psychosocial treatment in the rehabilitation process, major factors were discussed. Therefore, in order to provide the best possible care for injured elite athletes that require long-term rehabilitation, the importance of implementing psychological strategies and treatment techniques needs to be further studied and applied to current clinical practice.

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