

## Factors Influencing Safe Return-to-Play Recommendations Following Sports Injuries Assessed in Urgent Care Centers

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### Abstract

*Introduction:* Significant focus has been directed toward the alarming incidence rates of sports injuries and traumatic injuries associated with sports participation, particularly in the pediatric and young adult population. Anterior cruciate ligament and meniscal injuries occur in nearly 40 per 100,000 adolescents aged 5–18. From 2009 to 2010, approximately 2.6 million cases were treated in emergency departments or urgent care centers among the 29.2 million pediatric patients involved in sports and recreational activities. The ramifications of these injuries have long-term financial and functional impacts on the affected athletes. Patients are at a seven-fold greater risk of sustaining a second ACL injury, and 70% develop knee osteoarthritis as early as 10 to 15 years post-injury. Amendments to the provisions of athlete safety, such as the passage of return-to-play laws in all 50 United States, encourage comprehensive protocols that protect growing athletes from premature return to play after sustaining sport-related concussion injuries. However, limitations with the content and enforcement of these laws, along with societal pressures and mixed messaging, factor into the decision-making process for optimal management and safe return to play following all sports injuries. *Methods:* Here we present additional methods aimed at helping readers understand the study data, with particular emphasis on study methods, detailed statistical approaches, and processes specific to the determination of the dependent variables. This study is part of a larger project with the aim of observing TBI and other sports injuries in UCs in the Western Swedish County during high seasons for different sports and describing recovery progress. To comply with imperative guidelines for handling personal information, data from subtype injuries (other than TBI) were not used. Data collection occurred from 2014-2018 using a smartphone app for reporting visits regarding specific injuries. The app had a minimal impact and was implemented through briefings and regular reminders. Non-identifiable data from the Electronic Health Records were collected at the outpatient clinic. Foster visits were added for injuries with progress assessments. *Conclusion:* In conclusion, RICE and other factors influenced whether injury victims were advised to stop play or return to play at this check-in point. Specific sports injuries may benefit from the restriction of some activities while undergoing more examination before making sport-specific recommendations. Reliable and valid continuing education may achieve best practices through peer behavior modeling. This could be disseminated to all providers of care for otherwise healthy sport participants. Delineation of which healthcare providers sport participants seek out, the conditions they want to know about, and their readiness to learn in order to better advise sport participants on a healthy return to play should be examined. The advisability of follow-up care in a specialty sports treatment facility or with a specialist in these injuries, the use of telehealth, and other issues should be explored in future studies.

**Keywords:** Safe Return, Urgent Care, Trauma.

### INTRODUCTION

Factors influencing safe return-to-play recommendations following sports injuries assessed in urgent care centers. As the first gatekeeper to the health care system and primary provider for those who either do not seek healthcare or do not have a primary care provider, urgent care centers are playing an increasingly important role in healthcare. In the U.S., urgent care centers account for nearly 30% of the ambulatory care being delivered, attending to nearly 160 million patient encounters annually. Sports-related injuries are the fifth leading cause of non-fatal injuries and present a major public health concern, but the outcomes of injury management and

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referral to other healthcare professionals are crucial for obtaining athlete recovery and good outcomes on injuries that could potentially become more severe if not managed properly in time. There are guidelines and protocols for providing safe return-to-play recommendations following sports injuries, but to recommend a safe return-to-play, providers must be knowledgeable of current recommendations and incorporate them into their usual practice. The objective of this study was to investigate factors associated with the provision of safe return-to-play recommendations following sports injuries in urgent care centers.

## **Background and Significance**

Urgent care centers should provide safe return-to-play recommendations following recognition of common sports injuries. While urgent care providers are well positioned to provide guidance, little is known about factors influencing their decision-making process or sources of return-to-play recommendations. No studies have characterized return-to-play differences among practicing urgent care providers. Prior studies on sport injury evaluation and management in acute care clinics do not include further evaluation of practitioner sports medicine knowledge. While acute care practitioners have hoped for increased physician sports medicine training, current work completed suggests findings have not been realized. The researchers believe examining current urgent care providers' return-to-play knowledge and determining factors influencing their resultant return-to-play recommendations will be the spin-off benefits of the current project. In the primary care setting, the recommended duration of time before an athlete with a musculoskeletal injury may safely return to competitive sports has been identified as an area of need.

Practitioners are often unsure of, incongruent with, or fail to adhere to published consensus sports medicine recommendations for return-to-play. There are no published sport-specific, activity-specific, or skill-specific data available to assist an urgent care provider in providing accurate return-to-play information. Frequently, delay is the safest treatment option while the duration of time for nonoperative treatment recommendations is variable. Most urgent care centers do not have a sports medicine resource available to guide the management of these common pediatric-only complaints. Additionally, many non-pediatric-trained practitioners are either uncomfortable managing pediatric-only complaints or are trained in adult-type management solutions. These differences in the understanding of sports medicine management of non-life- and non-limb-threatening injuries may be due to lack of specialty training, differences in sports medicine training of pediatric and non-pediatric-trained providers, differences in the location of pediatric and non-pediatric residency training, and lack of specialized teaching or standardized urgent care center guidelines.

## **Purpose of the Study**

Post-injury clinical decisions significantly affect athlete health and have broad social and economic implications. Given the importance of safe return-to-play guidelines, current knowledge gaps, and the fact that a large proportion of athletes seek assessment and treatment of unplanned sports injuries in urgent care centers, we intended to assess the attitudes and knowledge of sports medicine professionals who work in these community settings. Our goals were to identify perceptions and practices underlying assessment of safety to RTP after sports injury. We hoped to recognize educational needs, areas of possible modification if consensus guidelines are developed, and potential barriers to guideline implementation. Ultimately, our results may help guide the development of educational and consensus-building efforts. Urgent care centers bridge the gap between hospitals and outpatient clinics or other offices and are designed to serve patients with injuries or illnesses that require attention but are not life-threatening. They afford efficient, convenient care and have been growing in the United States for nearly fifty years. To better understand experiences and current practices associated with the process of assessing safety for return to sports activity after injuries in athletes, we chose to survey employees in urgent care centers. These teams cover the range of medical professions who deal with sideline decisions but have not been the subjects of prior research in this area. Specifically, very little has been published about the extent to which central athletes and their families, regional sports organizations, and governing bodies influence acute aggressive injury management decisions when injuries for return-to-play.

## **Sports Injuries and Return-to-Play**

Sports injuries, particularly those involving adults or pediatric athletes, are a common and increasing concern. Activities of particular interest include recreational activities, fitness and sport activities, and collegiate, interscholastic, and youth sports. While most injuries are not severe, they result in an estimated three million visits to urgent care centers each year. The majority, an average of 1,000,000 during a specific period, occur in individuals 25 years old or younger. Nearly 50% of these visits occur during the four months of September, October, March, and April. The pediatric groups report increasing numbers of sports injuries, while trends in adult groups differ among the centers. As a result of the increasing numbers of individuals, particularly males participating in these activities, the annual number of sports injuries is expected to rise.

Age and sex predict which athletes are most at risk for sports injuries. Pediatric athletes experience unique risks that separate them from adult athletes. The pediatric skeletons are immature, placing them at greater risk for injury. Furthermore, growth within the growth plates increases the risk for avascular necrosis of the growth plate; for example, a significant percentage of fractures in male football players and a high percentage of fractures in female gymnastics athletes occur within the growth plate. In addition to their immature skeletons, the pediatric athlete is starting a sport, practicing among other athletes who are at different stages of sexual development. Despite these risks, some recreational activities report high injury rates in both adolescent and adult athletes, suggesting that broad guidelines need to be developed. Age, performance levels, and injury characteristics of injured athletes have also been used to help identify injured athletes within the private clinic setting. The identification of injury patterns, particularly those that may be time dependent, among athletes assessed in this diverse clinical setting is important for further recommendations.

## **Types of Sports Injuries**

In this study, sports injuries were divided into two types: traumatic and non-traumatic. The two types of injuries differ in their cause. Traumatic injuries are caused by external factors or a single incident at a precise location. Consequently, the onset of these injuries is immediate, and a definitive diagnosis, evident in some instances, can be obtained. Non-traumatic injuries are also known as overuse injuries. These injuries are caused by repetitive and excessive use of the tissue. As a result, the onset of symptoms due to overuse is insidious. Non-traumatic injuries tend to worsen over time, and therefore they are not always diagnosed correctly. These types of injuries are more frequently seen at an ECD than at an emergency department, which is visited after a traumatic injury, the onset of which is sudden after a single incident.

## **Importance of Proper Rehabilitation**

Safe return to play after sports injuries is crucial in preventing further injuries. Even in less severe cases, disturbances of the neuromuscular function can be detected over a year after injury. Complex rehabilitation is needed, which usually should consider more than the local injury. However, establishing a proper marker to decide about safe return to play is still challenging. Correctly prescribed, with the help of proper diagnostic methods, leading to a functional level pre-injury, and taking at least the appropriate period, as well as adaptive exercises, could counteract the consequences of being injured. Correct exercises can range from neurophysiological supports, using devices inducing specific postural adjustments, to physical activity at adapted intensities using resistance equipment, including weights or built-in elastic materials for muscles. This protocol typically assesses the function of tendons in professional soccer athletes, with different tests like maximal isometric voluntary knee extension, knee flexion, or stair climbing tests. The last ones were carried out to the same knee fullest point angle, making it comparable. After ten months postoperatively, their maximal voluntary knee extensor force reached preoperative levels in some patients, but with less than optimal neuromuscular performance, carried by other patients. Therefore, the proper return to play has to be decided individually for each athlete. This review is to evaluate the performance and the importance of using adapted muscle power testing and offering appropriate tailored feedback. These strategies should be considered to facilitate and optimize rehabilitation while reducing the risk of reinjury. Which one is the key to facilitate the proper return to play, either operative or nonoperative?

## **Urgent Care Centers and Return-to-Play**

Sports participation is a popular activity among children and adolescents, and high levels of sports-related injuries are expected in the pediatric population. A large number of these injuries are treated in settings such as hospital urgent care centers and emergency departments. Following discharge from urgent care centers, decisions related to return-to-play are made by healthcare professionals, athletic trainers, physical therapists, and the medical home, among others. However, the advice that is provided and the recommendations that are given, particularly in relation to when it might be safe to return to the sport following a sports injury, have largely been specifically investigated among sports medicine professionals. Additionally, no specific clinical guidelines or tools currently exist for medical providers at urgent care centers, but these resources have been suggested to help inform clinical decisions and improve patient-centered communication.

In the absence of specific urgent care recommendations for sports, physical activity, and sport-related return-to-play, the changes of these may be influenced by sports medicine professionals' practices, beliefs, confidence, and resources, as well as injury factors, which were listed in a previous investigation among a group of sports medicine physicians and APRNs. Therefore, the aim of this investigation was to enhance the knowledge about factors influencing return-to-play after trauma sports injuries being assessed and treated in urgent care centers to inform appropriate educational material and inform future research to improve both the clinical and communication skills of medical providers about return to patient-specific activities and sports.

## **Role of Urgent Care Centers in Sports Injury Management**

The use of urgent care centers to manage sports-related injuries has increased in the United States. Recent studies have shown that around 10% of the annual 155 million injury encounters nationwide involve sports-related complaints. Despite this high rate of consultations, there is little information about the influence of these consultations on return-to-play recommendations and compliance. In cases of acute sports-related injuries where there were previous reports about the influence of barriers in young athletes' return to play, the role of urgent care centers in this process remains unclear. Consensus statements were published by medical societies in the application of best evidence and practices to support effective and equitable access to care for sports and musculoskeletal injuries in elite athletes. Based on similar medical principles, we believe that most of these recommendations can also be conducted in the federated athletes presenting to the urgent care center. Clinical decision criteria in emergency settings are well evaluated for various conditions, with recent guidance appearing for sports-injured patients. Aspects such as the clinical evaluation, history of trauma, diagnostic imaging recommendations, and the need for orthopedic referral have already been evaluated in sports-related musculoskeletal emergencies. We believe that the dose and nature of physical activity in patients with musculoskeletal pain can be determined with an adequate and standardized approach. The adequacy of usual adherence to advice and motivation for safely returning to training and competition are poorly assessed outcomes in the importance of emergency care for sports-related conditions.

## **Factors Influencing Return-to-Play Recommendations**

While it is important for injured athletes to be seen in medical settings where evaluation and diagnoses can be made, there has been a substantial number of studies documenting variability in return-to-play recommendations among medical professionals, low rates of use of standard clinical practice guidelines, as well as how practice style is influenced by the athlete's level of play and the type of injury. Part of the difficulty with determining optimal practices during clinical encounters and appropriate care for injured athletes is that studies demonstrate that once patients leave the clinic setting, they experience high levels of misunderstanding of what the prescribed treatments are, low levels of recovery expectations, and concordance between the patient and the provider on the care of these conditions is also low. Other barriers that could contribute to high variability in return-to-play recommendations by medical professionals include the rushed nature of the visit, a series of distracting assessments and treatment interventions demanded, constituent and patient satisfaction, as well as a lack of clinician awareness within musculoskeletal injury fields of contradictions or insufficiencies among sports medicine research and clinical practice guidelines. The primary aims of the current study were: 1) to examine provider- and patient-related factors that influence the recommendation of the optimal return-to-play decision, and 2) to determine if concordance between the parent, athlete, and the provider leads to a shift in

return-to-play recommendations. (Chatterji et al.2020)(Schroeder et al.2020)(Marom et al.2022)(Lavoie-Gagne et al.2022)(Lavoie-Gagne et al.2021)(Swindell et al.2022)

### **Physical Factors**

Innovations designed to expedite physical recovery and reduce costs for patients treated at urgent care centers are warranted. Return-to-play recommendations offered at these centers not only have to consider the mechanisms of sports injuries, the current injury status of the competitors, and the specific risks for the injured athlete, but also culminate from the spectrum of specialty knowledge. The expectations of easy and quick solutions to ambulatory trauma frequently interfere with sports injury evaluation and may contribute to unsafe return-to-play decision-making. Appropriately qualified healthcare providers, properly trained and experienced in the examination and handling of sports injuries, thus appear mandatory either at the time of triage or in the direct vicinity of the urgent care. Otherwise, the trend towards a rising share of sports injuries managed at urgent care settings seems prone to be followed by persistently underreported risks for undergraduate and adult athletes.

### **Psychological Factors**

Psychological responses and beliefs about an injury have long been studied as factors predicting recovery. With the fear-avoidance model as the most often conceived theoretical framework, injury-related fear and pain catastrophizing play key roles in the delayed recovery process and the development of chronic pain. Injury fear is generally experienced as fear-avoidance beliefs, which influence the decision to rest and avoid future activity.

The clinician's ability to determine functional recovery following a sports injury has several barriers, including an athlete's lack of knowledge or skepticism about safe return-to-play time frames, the clinician's lack of awareness or training, and the specific characteristics of each individual affected by the injury. Besides objective and evidence-based decision-making, broader psychological, social, and contextual considerations are important. These findings underline the need for a broader overall athlete-centered care paradigm, which considers not just the injury, but also cultural and societal influences that may be leveraged in the recovery process. These recommendations can contribute to the development of educational models for clinicians and return-to-play protocols for athletes.

### **Social Factors**

Following a sports injury, social factors such as significant others can have a large influence on how quickly an injured athlete returns to play. In some social settings, cultural norms or behavioral expectations for male and female athletes may influence injured athletes' treatment-seeking behavior or the advice they receive about their injuries. In cases in which a male or female injured athlete decides to seek medical care, significant others can influence the type of care or action an athlete chooses to follow. Female athletes are often more compliant than their male counterparts with these significant others' suggestions, which results in no significant differences being seen between males and females with sports-related injury visits, treatment costs, or recommendations regarding imaging, medications, or referrals. However, significant others appear to have a large positive influence on clinician return-to-play recommendations regarding injured female athletes, as female clinicians often recommend returning to play sooner than male clinicians.

Additionally, social networks are large influencers of the musculoskeletal healthcare treatment men receive, as the men in these studies often describe their family and friends' negative encounters with healthcare professionals, their need for an extreme and intense injury in order to seek medical care, and a general lack of interest in the patient as a person from the healthcare professional. The theme of extreme circumstances being needed occurs in this qualitative study, as the emergency department patient suffered a ruptured Achilles tendon, multiple broken bones, or significant pain levels before deciding to seek care from a healthcare professional. However, as reciprocal positive relationships with healthcare professionals have been found to aid athletic injury rehabilitation, clinicians should attempt to build a trusting and patient-centric relationship with injured athletes and their significant others, as it can improve compliance, mental health, and recovery outcomes.

## **Guidelines for Safe Return-to-Play**

The selection of the return-to-play criteria in sports health care determines the time of return to team activities for the athlete. Sports health care providers rely on many recommendations when selecting return-to-play criteria for the athletes. Recommendations for minimum times of the return-to-play protocols have been published by multiple organizations. In addition, youth sports participation and the complications of early specialization in sports require earlier event timing as well as specific caveats for different athletes. Return-to-play recommendations must be a case-specific compromise that considers the athlete, injury, injury management, and individual pre-injury sport-specific demands. Individuals appropriate to provide recommendations are health care providers with expertise across the spectrum of factors that contribute to incomplete recovery from sports injuries, such as developmental exercise physiology, developing and maturing athletes, and leadership within sports organizations.

The athlete should have at least met certain conditions. The injured athlete must have completed the management protocols recommended for the specific injury, and the sports medicine team must be able to demonstrate that the athlete has the required competencies. The athlete's total recovery condition must be factored into the return-to-play decisions; experts traditionally stress that pre-participation physical condition and sport-specific skill sets are required for the safe return of the athlete to the game. The fact that the "all-clear" decision is based on their availability is based on the history and physical exam findings. The return to training and finally to compete must be contingent on the athlete proving that both systems' margins and minimal residual deficits are present. The slowest set of safety margins for return to play, which are thought to have the capacity to effectively protect an athlete from further exacerbation of an injured muscle, states that the decision to return to the game should be made within 24–32 hours from the moment separating the athlete from visible signs of discomfort. Permanent, sustained competence that persists for consistent and higher energy demands is the key to the athlete's safe return to activities.

## **Existing Guidelines and Protocols**

Standards and guidelines have been developed to assist medical professionals in assessing an injured athlete's return to play based on best evidence. Current guidelines are most often developed using expert opinion, physiological evidence, and professional practice consensus. Protocols are then used by medical professionals to provide a step-by-step and comprehensive routine performance. These protocols have been developed for some injuries, including concussions, shoulder dislocation, and upper extremity head injuries. One challenge is that a decision to allow return to play relies on many facets of the individual's assessment. There is an array of opinions and recommendations from the professional associations, and patient care settings are variable with the desired goal of ensuring the safe return of the athlete to full sport participation within a realistic return to play guideline.

The listed factors have not been systematically studied. For the most part, there are no validated guidelines or protocols developed by the professional associations that have been translated into patient care settings to address athlete return to sport. The lack of best practice protocols in sports is a problem when federal funding is mixed and not framed around a public health concern. Deficiencies exist during the decision-making process. What becomes obvious from the literature review is that using proposed guidelines developed years ago may leave a margin of error that is unacceptable for remembering the compromised patient outcome with long-term consequences. On-injury recovery times are often considerably longer than current practice guidelines. In surfacing this thought, the understanding was that the return to play continuum was without a framework. Data about compliance with existing guidelines or resolution to educational barriers by using the available resources were not available. Furthermore, unpublished data about compliance monitoring of providers following patients in their care are not available. All of these lead to the conclusion that the continuum may represent an area with numerous research opportunities, as it is currently a topic without a conclusion.

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