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Challenges surrounding return-to-play (RTP) for the sports clinician: a case highlighting the need for a thorough three-step RTP model

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Return-to-play (RTP) is a multifactorial process of retuning an injured athlete back to competition when risk for re-injury is minimized. Traditionally, these decisions are made by medical practitioners based on experience or anecdotal evidence. RTP decisions continue to be a challenging task for the medical practitioner. In the interest of advancing sports medicine for the betterment of athletes, improving the RTP decision-making process with a new paradigm has been suggested.[1] It stands to clarify the intricacies used by clinicians when making RTP decisions by providing insight into the multiple factors that must be considered; not only by the athlete and medical practitioner, but all relevant parties (i.e., coaches, trainers, and organizations). This case describes a 19-year-old Ontario Junior Hockey League (OJHL) player who fractured his left clavicle during game play and consequently, suffered a more severe injury to the same clavicle 5½ weeks later by returning to competition against medical advice. This

Le retour au jeu (RTP) est un processus multifactoriel du retour d'un athlète blessé à la compétition lorsque les risques d'une nouvelle blessure ont été réduits. D'habitude, ces décisions sont prises par des médecins selon leur expérience ou des données empiriques. Les décisions relatives au RTP continuent d'être une tâche difficile pour le médecin. Dans l'intérêt de l'avancement de la médecine sportive pour le mieux-être des athlètes, l'amélioration du processus décisionnel relatif au RTP avec un nouveau paradigme a été suggérée[1]. Cela vise à clarifier les subtilités auxquelles ont recours les cliniciens dans leur prise de décision relative au RTP en offrant un aperçu des multiples facteurs qui doivent être tenus en compte non seulement par l'athlète et le médecin, mais aussi par toutes les parties concernées (c.-à-d. les entraîneurs et les organisations). Ce cas décrit un joueur du Ligue de hockey junior de l'Ontario (OJHL) de 19 ans qui a fracturé la clavicule gauche pendant le jeu et a subi une blessure plus grave à la même clavicule 5½ semaines plus tard lorsqu'il est retourné à la compétition contre l'avis médical. Ce cas

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Patient consent was obtained for the use of clinical information and imaging with respect to this case report.

case highlights the potential issues that present when a RTP protocol is poorly executed and addresses the need to adopt a thorough decision-based RTP model proposed by Creighton et al.[1] Further, the discussion will draw on current literature and issues surrounding RTP, and the potential legal implications associated with premature return to competition. Given the lack of consensus among sport medicine experts in regards to RTP criteria, the presented model stands to provide a pivotal framework upon which future research can be conducted, while improving the current criteria in place when returning an athlete to competition to aid medical practitioners.

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met en évidence les problèmes potentiels qui se posent lorsqu'un protocole RTP est mal appliqué et répond à la nécessité d'adopter un modèle RTP décisionnel proposé par Creighton et autres[1]. En outre, on y discute des publications scientifiques actuelles et des questions entourant le RTP, ainsi que les conséquences juridiques potentielles associées à un retour prématuré à la compétition. Compte tenu de l'absence de consensus parmi les experts en médecine sportive en ce qui concerne les critères du RTP, le modèle présenté vise à offrir un cadre essentiel à partir duquel des recherches futures peuvent être menées, tout en améliorant les critères actuels dans la décision du retour de l'athlète à la compétition pour aider les médecins.

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MOTS CLÉS : retour au jeu, RTP, fracture de la clavicule, modèle décisionnel, chiropratique

Introduction

Return-to-play (RTP) decisions are inevitable for any medical practitioner working with athletes. It is necessary for these practitioners to understand the weight these decisions have on an athlete's health and career. As a result of the complexity of these decisions, they are often made in a team environment involving clinicians, therapists, or other members of the integrated support team (IST) to address all relevant concerns (i.e., movement mechanics, psychology, etc.).[1-4] Despite existing guidelines for return to sport following specific musculoskeletal injuries, such as anterior cruciate ligament (ACL) reconstruction, there is no current standardized definition for RTP.[1-4] As a result, this forces practitioners to make clinically informed decisions based on previous experience and practical judgment when injuries do not fall within a preexisting guideline or rigorously developed RTP protocol. The American College of Sports Medicine (ACSM) recognizes RTP as the "decision-making process of returning an injured or ill athlete to practice or competition."[5] Regardless of definition, the goals of any RTP decision are to return the athlete to competition, protect their health and welfare at all costs, and reduce the risk of reoccurrence.[5] It could then be suggested that one homogenous definition for RTP may not be appropriate, as these decisions require the full integration of a multitude of factors unique to the individual athlete, the given circumstances, and specific injury.[6] Recognition of this issue has resulted in a shift of attention away from creating a standardized definition to focusing on the development of a common language spoken by all parties involved in RTP decisions to ensure athletes, and their return to competition, are being viewed holistically to reduce the risk of recurrent injury.[1]

Recent scientific and legal investigations into the long-term sequelae associated with persistent mild traumatic brain injuries (MTBIs) and concussions witnessed in boxing, football, and hockey has resulted in increased media coverage about the safety of participation.[7,8] Indirectly, this has caused an increased awareness about the RTP process, bringing into question the effectiveness of the current standards when returning an athlete to competition following injury. The result has been a plethora of recent research investigating the RTP process for serious conditions resulting in long-term morbidity or even mortality (i.e., spinal cord injuries, cardiovascular abnormalities, and concussions).[1,9] However, little attention is given to the common musculoskeletal traumas experienced by athletes in all sports and the associated factors that may

impede an athlete's successful return to competition.[10] As a consequence, RTP decisions continue to be a contentious topic.

Decision-making is the cornerstone of all RTP recommendations.[1-2] Appropriate consideration and rationale must be utilized while all the parties involved are acknowledged. Traditionally, most decisions are made using the rational decision-making model that indicate a series of steps that decision-makers should consider if their goal is to maximize the quality of their outcome.[1,11] In other words, the decision-maker stands to calculate all the possible advantages and disadvantages of all available options, while selecting and implementing the best option.[11] Although the nature of this model is useful for personal or corporate decisions, it is less applicable when viewed from the medical context as it assumes one person (the clinician) is solely responsible for making a decision that affects someone else (the athlete).[1]

Historically, RTP decisions have been viewed as such, where medical practitioners attempt to determine when the risk of recurrence is minimal and performance is optimal, suggesting the appropriate return of athletes to competition.[10] Typically, these decisions are created through a combination of clinical assessments (strength, flexibility, imaging) and functional field-testing.[10] Though relevant, this approach assumes that the physiological state of healing is the only component involved in returning an athlete to competition, suggesting that once the injured tissue has healed, the athlete should be able to return to competition through progressive reintegration. This rationale fails to consider that RTP decisions may be largely influenced by extraneous factors other than physiology, such as mental preparedness or socioeconomic issues, which may mitigate or increase the risk of return. This highlights the dynamic and complex nature of RTP decisions that require an ever-evolving process to accommodate the multiple factors involved. Clinicians must understand that athletic participation is never risk-free, with evidence indicating a 4-fold increase in the risk of re-injury after sustaining an injury.[1,3,12,13]

Medical practitioners involved in RTP decisions must work towards developing consistency in these models and adopt an athlete-centred approach. Although a standardized definition for RTP may never be possible, a standardized framework that includes core principles in returning an athlete to play safely must exist. In an attempt to address these complex issues and develop a common language among all parties involved, Creighton and colleagues[1-2] created and validated a three-step model for RTP decision-making for sports medicine practitioners that can be used for emergent, urgent, and non-urgent decisions. The purpose of this current report is to highlight a case in which a RTP protocol was poorly executed, as failure in athlete compliance led to a recurrent left clavicle fracture involving an Ontario Junior A (OJHL) hockey player. Using the three-step RTP decision-making model proposed by Creighton *et al*.[1] as a guide, our discussion will address the flaws in the case presented and demonstrate how medical practitioners can appropriately confront some of the extraneous variables that occur during the RTP process with athletes.

Case presentation

A 19 year-old male Ontario Junior Hockey League (OJHL) defensemen suffered a left shoulder injury while delivering a body check that forced him to leave the ice. After being removed from game play he was assessed on-site in the arena dressing room by the team therapist. After observing a marked global limitation in all left shoulder ranges of motion with bony tenderness, early hematoma development, and subtle deformity in the left clavicle, he was sent to the emergency department. Radiographs taken at the hospital revealed a non-displaced transverse fracture to the left middle-third of the clavicle (Figure 1). Due to the initial presentation of the injury, the orthopaedic surgeon at the hospital decided to manage the fracture conservatively. This included a 7-day prescription of Tylenol 3 (350mg of acetaminophen; 36mg codeine), stabilizing the shoulder girdle with a sling, and encouraging the patient to limit all ranges of motion above shoulder height, such as overhead reaching and cross-flexion. The patient was then scheduled for follow up at the fracture clinic in one week.

Upon orthopaedic follow up at one week, the fracture site remained stable and the decision to continue to manage the fracture conservatively was made. The patient was told that he would not be returning to sport until clearance from the surgeon was provided. At the time, the surgeon estimated that an early return to sport could occur in 6-8 weeks if signs of radiographic healing were present. In agreement with the literature, the anticipated return to contact sport was estimated at 8-12 weeks in or-

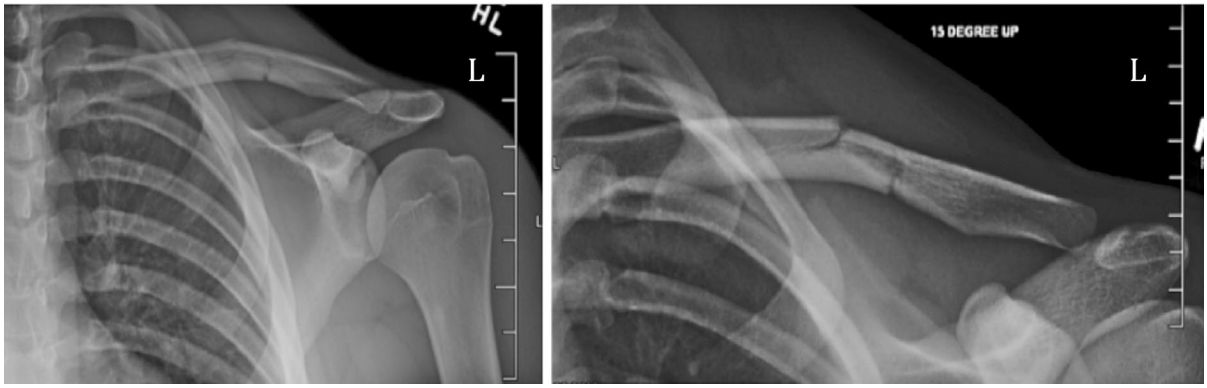

Figure 1.
Left AP shoulder and AP clavicle spot view radiographs demonstrating a non-displaced transverse fracture through the middle-third of the clavicle.

der to achieve tissue healing and allow adequate time to regain pre-injury levels of shoulder function[14,15] The patient was encouraged to continue wearing his sling and use regular strength acetaminophen (300mg) for comfort for the first 2-3 weeks following the injury. The surgeon also advised him to begin gentle neck and shoulder range of motion (ROM) exercises and seek physical therapy for early management. As such, the patient presented to a private practice chiropractor affiliated with the team.

On initial presentation to the chiropractor one-week post-trauma, there was minimal swelling over the fracture site. Bony tenderness and fracture tests (clavicle shear, compression, and vibration) were still provocative locally at the left clavicle. Active left shoulder ROM was painful and reduced in flexion, abduction, and cross-adduction by 15%, 20%, and 40% respectively. Passive left shoulder internal and external rotation with no added abduction was painful at end-ranges. Resisted left shoulder ROM revealed strength deficits and pain with flexion (rated 3/5), abduction (rated 4/5), and cross adduction (rated 3/5). Hypertonicity was present in several cervicothoracic spine, shoulder girdle, and periscapular muscles, most notably in the left upper trapezius, scalenes, and pectoralis muscles. To mirror the recommendations of the surgeon overseeing the case, the patient was asked to refrain from returning to ice hockey or off-ice training until medical clearance was provided. This included radiographic evidence of healing and the absence of pain and/or weakness with all provocative clinical and orthopaedic testing. The initial goals (first 2 weeks) in the plan of management included patient education, pain control, protection, and restoring ROM in the affected upper extremity joints. The patient was educated on the natural history of the injury, the rationale for the estimated return to non-contract play in 6-8 weeks, and potential complications of fracture non-union with poor adherence to the plan of management. To address pain control and reduce edema over the lesion, initial treatment involved the application of microcurrent (300 Hz, 300 μA) with ice compression over the left clavicle. Additionally, contemporary medical electroacupuncture was utilized for pain modulation and to restore neuromuscular function. Although application sites varied throughout the course of treatment, key points included bilateral segmental spinal stimulation at C2-6 and KI-27, LU-1, LU-2, LI-15 to 16, and SI-10 to 15 on the left. Active Release Techniques ® were directed to the affected periscapular, cervical, and thoracic paraspinal musculature. An overview of rehabilitation exercises utilized throughout the course of the treatment is presented in Figure 1.

At 4 weeks post-trauma, the patient was pain free in all left shoulder active and passive ROM. There was no bony tenderness or palpable movement at the left clavicle during all previously positive clinical fracture tests. There were no strength deficits present with any left shoulder ROM and they were comparable to the non-injured right shoulder. The patient was also able to perform progressive rehabilitation exercises (Stage II & III, Figure 1) involving resistance and perturbation training at all end-ranges

with no difficulty. Given these findings, the patient was allowed to return to non-contact practice with additional padding worn over the left clavicle and acromioclavicular (AC) joint at 4 ½ weeks post-trauma. Padding included a combination of leukotape as a base to provide increased proprioception to the shoulder girdle musculature and the application of a gel pad over the fracture site and AC joint to help dissipate impact loading. The patient also wore a bright red jersey to indicate to the other players that he was not to be engaged in contact during practice. During the first week back at practice, the patient experienced no issues with his shoulder during skating, stick handling, or shooting.

At the beginning of the 5th week post-trauma, the patient had a follow up appointment with the orthopaedic surgeon who was pleased with the progress. Radiographic evidence revealed signs of healing with a large callus formation. Some remnants of the original fracture line could be visualized in the trebecular portion of the mid-shaft of the clavicle. The surgeon suggested that he was cleared to continue with his training and could introduce light contact (bumping and/or pushing for puck or position without checking) in on-ice practice. He was not cleared for game play and was scheduled for one more follow up at 8 weeks with an estimated return to full body contact and game play at 8-10 weeks. Although there were no pain or strength deficits in the left shoulder, the decision to not clear the athlete for game play was based on current imaging and literature suggesting only partial healing of the fracture[14,15]

During the 5th week post-trauma, the team was entering the second round of the playoffs with a diminishing roster due to injuries. As the athlete was the captain of the team, working towards an athletic scholarship, and key member to their post-season success, pressure was placed on the team therapist from both management (owner, manager, coaches) and the patient to clear him for game play. To support their argument, the parties involved highlighted his recent success with rehabilitation, on-ice practice performance, and no issues with his shoulder with regards to pain or function. Reiterating the recommendations of the surgeon and the literature, the therapist advised continuing with the graduated return to play protocol and would not allow him to dress until radiographic evidence and clearance from the surgeon was provided. At 5 ½ weeks post-trauma, the patient was adamant about playing and threatened to dress for the game. Refusing the orders of the team therapist, chiropractor, and surgeon, the patient signed a waiver stating that he was returning to game play at his own risk against medical recommendations.

The patient returned to the second round of the playoffs at 5½ weeks post-trauma and had success in his first two games despite the high level of physical contact. During his third game, he was unexpectedly hit from behind into the boards where he suffered a second insult to the same left clavicle. Once again, after being evaluated at the arena he was sent to the hospital for assessment. Radiographs taken at the fracture clinic demonstrated a more complicated transverse fracture originating at the middle-third of the left clavicle that extended through the long-axis of the bone and through the recent callus formation (Figure 2). Under the discretion of the orthopaedic surgeon, it was decided that surgical management was warranted to stabilize the clavicle for future use in sport. As a result, the

Figure 2.
Left AP shoulder radiograph taken 6 weeks after the initial injury demonstrating the second clavicle fracture. The image shows a more complicated middle-third clavicle fracture through the newly formed callus with displacement.

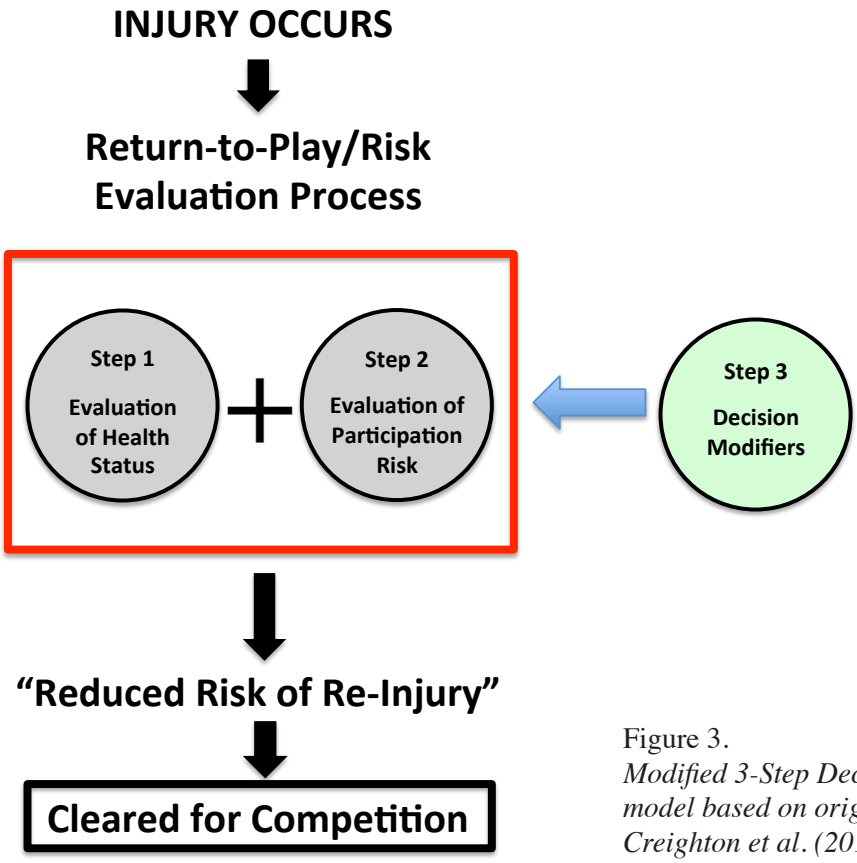

Figure 3.
Modified 3-Step Decision-Based RTP model based on original work published by Creighton et al. (2010).

patient suffered a season-ending injury with an estimated recovery time of three-months after surgical reduction and fixation.

Discussion

Decision-Based RTP Model[1]

The previously discussed Decision-Based RTP model is conveniently divided into 3-steps (Figure 3) with 19 factors (Table 1) that through consensus have been previously deemed as relevant in the RTP process.[1,5] The first step in the decision-based process is to evaluate the health status of the athlete. This is accomplished by assessing an athlete's recovery from a biological, psychological, and functional standpoint to determine how much healing has taken place. The information gathered is crucial for medical practitioners in determining risk of participation.[1,13,16] As previously discussed, some clinicians consider the absence of symptoms to be sufficient when returning an athlete to competition, but fail to realize that factors such as age, gender, history of previous injuries, and psychological state can significantly impact the safe return to competition.

Through integrating the health status of the athlete obtained from step 1 with the evaluation of participation risk (step 2), practitioners can weigh the advantages and disadvantages of return to competition. However, practitioners must be aware of the 5 identified risk modifiers (Table 1), such as type of sport or competition level, that can have a significant effect on increasing or decreasing participation risk.[1] It is not until these first two steps are considered that the associated risk evaluation of competition can be completed.[1]

Finally, the third step in the model actively investigates the contribution of extraneous factors, such as the timing of the season or external pressures, that may modify ones

Table 1.
Progressive exercises used in the case RTP process following a non-displaced clavicle fracture.

Phase	Exercises/Stretches	Reps	Sets	Time
Stage I (1-2 weeks)	1. Global shoulder passive end-range holds	12-15	2-3	15 s
	2. +/- PIR protocols	12-15	2-3	8 s
	3. Global isometric shoulder ROM	12	3	8 s
	4. Wall crawl (flexion & abduction)	12	3	
	5. Scapular (wall) clocks (flexion & abduction)	12	3	
	6. Wall angels with chin tuck	12	3	
	7. Global shoulder ROM with tubing and/or resistance band	10-12	2	
Stage II (2-4 weeks)	Shoulder PNF D1 & D2 patterns with band	12	3	
	Side-lying external/internal rotation with band	12	3	
	Scaption with 10 lb dumbbell to shoulder height	10	2	
	Low row with resistance band	12	3	
	Prone dynamic scapular setting exercises (YTWL)	12	2	
	Wall push-up and push-up plus	12	3	
	Prone push-up and push-up plus	12	3	
	Rhythmic GHJ stabilization/perturbation drills in supine position with clinician resistance	10	3	
Stage III (> 4 weeks)	BOSU push-up and push up plus	15	3	
	Single-leg plank push-up	15	3	
	Exercise ball shoulder press and scaption	15	3	
	Exercise ball dumbbell chest press	15	3	
	Wall balls (medicine ball)	Max	3	
	Standing single arm push-press	12	3	
	Kettlebell arm bar exercise	10-12	3	

decision.[1] The addition of these external factors can bring forth serious ethical concerns, especially when several practitioners indicate that the health and wellbeing of the athlete should be the only consideration. As previously eluded to, no participation is risk-free and consideration of these extraneous factors aids clinicians to determine the acceptable level of risk.[1,12] It is important to realize that decision modifiers are not limited to the athlete, but often involve third parties (i.e., coaches, organizations, and medical practitioners). This extraneous pressure may result in an early return to competition, resulting in potentially negative consequences that are not in the athlete's best interest. In the case presented, there were several extraneous factors that contributed to a more complicated clavicle fracture that resulted in a season-ending injury and more invasive surgical management. Additionally, some concern has been raised that not all practitioners consider the aforementioned factors as relevant as they

are indirectly related to clinical practice.[1,16] However, to address this concern the model has placed decision modification on the periphery, as decisions modifiers do not contribute to the overall risk of participation, but potentially contribute to how decisions are made. Furthermore, decision modifiers cannot be used in isolation, as they require context when making RTP decisions.

Summary of Evidence and Model Validation

After Creighton *et al*.[1] developed the 3-step Decision-Based RTP model from the knowledge and experience of expert clinicians, it required validation and transformation. The model needed to transform from a theoretical construct to a clinically relevant tool in a developing body of sports science literature.

Matheson *et al*.[3] performed a systematic review to determine how much evidence exists within each step of the proposed model. A detailed search revealed 148 relevant articles, with only 13 articles specifically focusing on the RTP process.[3] The results revealed a large body of low-level evidence, suggesting the urgency of developing a standardized RTP definition or process upon which clinical research can be conducted. Shultz *et al*.[16] attempted to describe the variability in the RTP decisions of experienced team medical practitioners and their clinical opinion of the 19 factors used in the 3-step RTP decision-making model using a survey questionnaire. The findings further affirmed the need for a precise definition in RTP decisions as their research demonstrated increasing variability in RTP decisions among clinicians when presented with more ambiguous definitions. In this context, a more precise definition resulted in improved consistency among clinicians when making RTP decisions. This suggests the importance of developing the 3-step RTP decision-making model upon which future research and educational resources can be established to improve these complex decisions among sports clinicians.

A recent investigation by Shrier *et al*.[2] attempted to validate the 3-step RTP decision model using a crossover design survey completed by 343 self-identified clinical members of the ACSM. The group of clinicians consisted of physicians, chiropractors, physical therapists and others (podiatrists, nurse practitioners, athletic therapists, kinesiologists, occupational therapists, physician's assistants, and registered nurses) involved in RTP decisions. It was concluded that clinicians do in fact increase activity restriction with increasing injury severity, while altering RTP decisions based on both the sports risk and decision modifiers previously discussed.[2] Additionally, the following study demonstrated that perceived increasing severity of the case presented resulted in greater activity restrictions, suggesting that RTP decisions are highly context dependent.[2]

Table 2.
Relevant considerations at each step of the Decision-Based RTP model.

	Relevant Considerations
Step 1: Evaluation of Health Status	• Patient demographics (e.g. age, sex)
	• Symptoms (e.g. pain, clicking)
	• Personal medical history (e.g. recurrent injury)
	• Physical exam findings (e.g. swelling, discoloration)
	• Diagnostic imaging and lab test (e.g. MRI, blood)
	• Functional tests (e.g. hop test, movement screens)
	• Psychological state (e.g. depressed, anxious)
	• Potential seriousness (e.g. concussion vs. tennis elbow)
Step 2: Evaluation of Participation Risk	• Type of sport (e.g. contact vs. non-contact)
	• Position played
	• Limb dominance
	• Competitive level (e.g. recreational vs. professional)
	• Ability to protect (e.g. padding, taping)
Step 3: Decision Modification	• Timing & Season (e.g. preseason vs. playoffs)
	• Pressure from athlete (e.g. willingness to compete)
	• External pressure (e.g. coach, organization)
	• Masking of injury (e.g. effective analgesics)
	• Conflict of interest (e.g. financial)
	• Fear of litigation (e.g. if restricted or permitted)

Application of the Decision-Based RTP Model

In an attempt translate this theoretical model into clinical context, the case details will be outlined to highlight the contributory factors in the premature return of the patient that resulted in a more serious, recurrent injury. As previously discussed, the initial injury resulted in a stable, non-displaced left mid-clavicle fracture. Clavicle fractures are reported to represent 2.6% of all fractures with 69-81% occurring at the mid-shaft.[17] Fractures of the clavicle typically occur as a result of a direct blow to the shoulder, resulting in anterior-inferior sagging of the glenohumeral joint. As witnessed in the case, they result in an inability to lift the arm due to pain, bruising, swelling, and/or tenderness over the collarbone. They may present with a grinding sensation associated with motion and a visible deformity.[18] Traditionally, mid-shaft clavicle fractures are treated non-surgically requiring approximately 3 months of healing (8-12 weeks) before returning to competition.[14,19] However, in this case the athlete ignored sound medical advice and returned to competition after only 5½ weeks.

This case appropriately demonstrates the complexity associated with RTP decisions affecting both the clinician and the athlete. When reflecting on the case, the appropriate risk evaluation process took place (Steps 1 & 2 of the model) with the correct suggestion that the athlete should not return to competition at the 5th week post-trauma. Based on the literature, it was also correctly identified that these injuries require a range of 8-12 weeks before reintroduction to competition. This timeframe allows for both physiological and radiographic healing to take place, while the athlete can achieve pre-injury levels of function (i.e., strength, ROM, endurance) in the affected extremity. However, against sound medical advice from the team therapist, chiropractor and orthopaedic surgeon, significant decision modifiers (Step 3 of the model) resulted in the premature return to competition that consequently lead to re-injury requiring surgical fixation. A more in-depth evaluation of the RTP decision from the athlete's perspective revealed that extraneous factors including season timing (playoffs), a diminishing roster from injuries, risk of losing an athletic scholarship, and external pressure from team management significantly contributed to the premature return to play. In the final decision by the athlete to refuse medical advice about RTP, the appropriate measures were taken by the team medical staff to decrease associated liability should a second injury occur. These measures included the appropriate documentation (i.e., RTP waiver), and an assessment of the athlete's condition in which information was provided surrounding the risks of returning to competition.

Return-To-Play: Whose Decision Is It?

As illustrated in this case, RTP decisions are complex and multifactorial. In addition to the implications for the injured athlete, the coaches, organizations, and even the medical personnel can be impacted. Often these decisions are made in team environments comprised of individuals with varying experience and knowledge surrounding athletic injuries.[20] Ultimately, the goal would be to achieve a unanimous decision concerning RTP of a given athlete for optimal congruency and management. However, this is not often the case resulting in mixed messaging and confusion among involved parties. Shrier *et al*.[13] conducted a survey questionnaire of Canadian sports medicine physicians, physiotherapists, athletic therapists, chiropractors, massage therapists, athletes, coaches and representatives from 3 organizations to determine which profession is best perceived to evaluate an athlete's RTP. It was concluded that medical doctors, physiotherapists, and athletic therapists were considered best able to assess factors related to risk of injury and associated complications.[13] Alternatively, it was noted that athletes, coaches and sport associations were considered to have the best capacity to assess factors related to competition (i.e., desire, psychological, and financial impact and loss of competitive standing).[13]

Currently, there is no conclusive evidence as to who is best informed to make RTP decisions. This is especially true when a particular pathology presents (such as a fracture) and the appropriate care and RTP process is reserved for the decision of a medical specialist. Through the continued and diligent involvement with National Sports Organizations (NSOs), a consistency will emerge, resulting in better interdisciplinary management of athletes and involvement with RTP decisions. However, it has been suggested that resolution of interprofessional differences in RTP decisions can be accomplished through advancing and conducting research, which is likely to result in improved education and awareness in regards to the RTP process.[13]

Legal Implications of Return-to-Play Decisions

In a situation where a legal proceeding was to result from an improper RTP decision, the question of negligence would be at the forefront of the discussion. Negligence is defined as "a failure to exercise the care that a reasonably prudent person would exercise in like circumstances".[21] In the case of negligence the plaintiff must prove the following[21]:

1. The defendant owed a duty toward the plaintiff
2. The defendant failed to act in a reasonable way, or breached their duty
3. The defendant's breach was the actual cause of another's injuries
4. The plaintiff suffered actual injuries, for which he or she may claim damages

A negligence lawsuit can be a difficult situation for all parties involved, as the injured parties are seeking remuneration for damages, while the defendants are forced into a situation where their medical merit is being questioned. Team doctors are faced with difficult decisions everyday and are responsible for[22,23]:

1. Properly assessing the athlete's condition
2. Providing appropriate medical treatment
3. Providing clearance to participate, and
4. Informing the athlete of the risks of athletic participation given the particular medical condition

When considering medical clearance for participation, it is viewed as discretionary decision as long as it adheres to the common and most current medical practice. [22,23] In this respect, there is no liability for negligence when a clinician makes a judgment call that is within the accepted standard of medical care.[22,23] In the case presented, the athlete went against all indicated medical advice from both the acting surgeon and team therapists and returned to competition where he re-fractured his left clavicle resulting in surgical intervention. At the time of return, all involved medical staff received signed documentation indicating his participation against medical advice, voiding practitioners of medical negligence. Had this been a case involving concussion or brain injury an athlete could be deemed unable to make rational decisions about their RTP status, thus preventing from operating against medical advice as the medical practitioners are now acting within the acceptable medical standards. However, if an athlete is returned to competition prematurely as in the case presented, a clinician may be held responsible resulting in a successful negligence lawsuit. Therefore, it is paramount that team doctors be involved in RTP decisions, where pros and cons of return are discussed and clear for all parties as to avoid unwanted litigation.[24-26]

Summary

Return-to-play (RTP) recommendations continue to be contentious issues among the sports medicine community. A detailed understanding of the RTP decision-making process is crucial for all team doctors, as these decisions are inevitably a part of a medical practitioner's duty.[1,5] Though limited evidence exists in regards to who is best positioned to make RTP decisions, medical practitioners currently bear much of this load and expertise required to adequately inform athletes of risks associated with return to competition. However, the multifactorial and context-specific nature of RTP decisions suggest that it becomes a shared decision involving all relevant parties in an ideal scenario in an athlete-centred approach.[1,3,5] Currently, chiropractors currently sit at crossroads where future involvement in RTP decisions will be based on a strong understanding of all relevant factors and a willingness to work in an Integrated Support Team (IST) that positions the athlete's needs at the forefront of all decisions. Future direction should continue to focus on developing the 3-step Decision-Based RTP Model by Creighton and colleagues[1] as it provides a pivotal framework upon which research can be conducted and future RTP recommendations can be developed.

Authors' note: Following the acceptance of this paper, the 2016 consensus statement on return to play from First World Congress in Sports Physical Therapy (Bern)[27] was published. This statement highlighted several key issues brought up in this paper such as the lack of standardized approaches, definitions and outcomes with RTP while stressing the need to utilize biopsychosocial models. As such, both authors highly recommend reading this consensus statement as it hopes to guide the future in RTP decision-making.

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