

THE (RETURN TO PLAY) TIMES, THEY ARE A CHANGIN'

FOUR EXAMPLES OF HOW DECISION-MAKING IS IMPROVING OUTCOMES FOR THE FOOTBALL PLAYER WITH ACL INJURY

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There are just a few weeks remaining of the season's football campaign. The match calendar is chock-a-block and your star player, with an expiring contract, tears his anterior cruciate ligament (ACL). Might this be a career-ending injury? Fast-forward a few months. The initial treatment and rehabilitation have progressed as well as can be expected and you have somehow managed to keep him engaged – despite the monotony – and the media off your back. So far, so good. Then things start to get interesting. There is constant speculation of a possible new contract and he will return to the pitch. Shortly after, he signs a contract extension and the manager takes an unexpected stand – no return to play until the medical team say that it is safe. A brief reprieve! However, there is still ongoing media speculation that the player

is expected to return soon. How do you tackle this?

Return to play (RTP) has long been the dominant source of questions when an athlete is injured. As a team clinician, you might find yourself fielding questions from coaches, the media and player agents about diagnosis, management and RTP. Most importantly, you need to be able to give accurate, unbiased information to the player, who has the most important question: “When can I play again?”. You also need to combine lots of information to make quality decisions in practice that support players. These questions about RTP can be very difficult to answer, especially when you have only recently diagnosed the injury. You will probably need to consider not only the influence of associated injuries and biological variation in healing capacity,

but frequently many non-medical factors such as timing in the season, the wishes of the player and external pressure from the coach, media and agent¹.

In years long past, the dreaded ACL injury often spelt the end of a player's career²; or if not the end, very often the player who returned from injury was never quite the player he was before injury. Now, while often a season-ending injury for the player – bringing with it a hefty stint on the sidelines – an ACL tear does not necessarily draw the curtain on a playing career. Despite patient expectations of RTP³, systematic review evidence suggests that four out of every five patients with ACL reconstruction can be expected to RTP following surgery, but only 65% return to their pre-injury participation level⁴. Only one-third of sub-elite competitive team sport athletes in Australian rules



football, netball, basketball and football had returned to competitive sports 12 months after surgery⁵. In contrast, almost all male professional football players in Europe return to their pre-injury level within a year following ACL reconstruction^{6,7}.

Return to play – the perennial issue – has seen a resurgence in research aimed at understanding decision-making processes^{1,8}, the factors influencing the return⁹ and how the clinician can help the player safely return to play^{10,11}. For clinicians and players, improvements in our understanding of RTP, combined with advances in management practices, means things are looking up. But despite these positives, there are uncertainties surrounding the management and proper counselling of the football player with ACL injury. To continue to improve our practice, it is helpful to look back at the strides we have made and to use this reflection to help guide us for the future. It is our pleasure to give our take on some of the key issues in RTP after ACL injury, reflecting on what has changed and looking at how these changes, alongside advances in our understanding of RTP, can help our

future practice. In this article, we highlight four examples of how better practice is improving RTP for the football player with ACL injury.

EXAMPLE 1: SHARED DECISION-MAKING IS THE FUTURE

The team physician (or the player's surgeon) was once the gatekeeper of the RTP decision (albeit beholden to the wishes of the manager). One important change is a stronger emphasis on actively involving the injured player in the RTP decision-making process⁹. This is beneficial because players value being afforded autonomy in RTP decision-making¹². The player's perception of control over his or her RTP (autonomy) is linked to mental readiness to return and a key concern of injured players is losing autonomy in RTP decision-making¹².

Shared decision-making is well established in healthcare¹³, but is a relative newcomer to the sports medicine arena. The benefits of shared decision-making are clear: improved health knowledge, improved confidence in and understanding of decisions and more active involvement

in the management of a health problem⁴. Given the important role that the mental side of the game has in the RTP process for many players, when players feel they are shut out of decision-making, it can erode confidence and for some, hinder the RTP¹².

The 2016 Bern consensus on RTP emphasised that RTP decision-making should be shared between all stakeholders⁹. In its simplest form, shared decision-making involves the player, coach and team clinician¹⁵. It may also be appropriate to involve others such as parents (for junior players), player agents or other practitioners. Effective shared decision-making happens when each stakeholder shares unbiased, relevant information about short- and long-term issues regarding RTP, with the goal of helping the player reach an informed decision regarding their return to play. Because of this, the composition of the team and the roles of each of the stakeholders in the decision-making process should be determined as early as possible. Members of the decision-making team should be prepared to regularly share information with all stakeholders⁹.

EXAMPLE 2: REHABILITATION WITH A GOOD PINCH OF CRITERIA AND A DASH OF TIME

Historically, rehabilitation after ACL injury was solely based on time-fixed protocols consisting of different phases, ending with release to unrestricted sports participation. In other words, the time was usually decided first and the progression of the rehabilitation programme was adjusted to fit a pre-selected final time point. Scant attention was paid to patient-reported outcomes or functional tests. Very often, this arbitrary time point for the end of the rehabilitation and clearance to RTP in football (and other contact, cutting and pivoting sports) was 6 months postoperative¹⁶. Recently, there has been a shift to a criteria-based and multi-factorial approach, based on shared decision-making¹⁷. The main dilemma when deciding which are the best criteria to use for RTP, is that there is a lack of research to guide clinicians on which criteria to choose¹⁸.

The problem for the player is that RTP too soon following ACL reconstruction dramatically increases the risk for new knee injury^{10,19}. The good news is that it is possible to reduce the rate of new knee injuries by at least 50% for every month that the RTP is delayed, up to 9 months following surgery¹⁰. Delaying RTP beyond 9 months does not make a statistical improvement to the number of new knee injuries, but there is an argument to delay the RTP even further in

high-risk groups such as the young athlete returning to pivoting sports²⁰.

The time criterion is an important one, since it indirectly reflects the biology of ACL graft tissue healing and restoration of neuromuscular function. Graft healing is likely not complete in humans until at least 9 months after ACL reconstruction²¹ and it may take athletes up to 2 years to recover neuromuscular function²⁰. But it is not time alone that should govern rehabilitation and RTP progression – meeting strict functional criteria should also be non-negotiable. Failing to meet high-level functional benchmarks prior to returning to the pitch increases the risk of ACL graft rupture four-fold¹¹. Therefore, time-based and criteria-based decision models should be seen as complimenting each other, not in opposition. This approach is already used when managing athletes with sports-related concussion²², so it should not be so hard to take the same approach in managing RTP after ACL injury.

Based on current evidence, a reasonable approach following ACL reconstruction in football players, regardless of gender and playing level, could be a minimum lay-off of 9 months and using an objective RTP test battery (including quadriceps strength tests, running tests and hop tests) at the 9-month mark, to decide whether the player is physically ready to return to football. Regular functional testing throughout rehabilitation (adjusted to the

physical capacity of the player) will help to monitor progress and provide feedback to the player that can reinforce the shared goal-setting²³. Consider introducing the RTP test battery from 6 months postoperative, if the rehabilitation has progressed without major setbacks, with the aim of giving the player feedback on his neuromuscular status and to fine-tune the final phases of the rehabilitation. Nevertheless, the player should not be cleared to return to full competition before 9 months, even if the objective RTP criteria are met earlier^{10,11}. The player who does not pass all the test criteria at 9 months should continue rehabilitation until he passes all the tests.

EXAMPLE 3: THE PLAYER NEEDS TO BE MENTALLY READY TO RETURN

It seems like research has started to catch up to what has long been known in clinical practice: that there is an important mental side to RTP²⁴. Injured athletes often talk about the mental challenge of being injured – concerns that they will not reach pre-injury performance levels again, losing the routine of regular training, losing contact with the team, the boring monotony of rehabilitation, feeling like they are no longer an athlete, etc. Now there is research evidence highlighting the strong effect psychological factors including fear of re-injury and confidence have on RTP after ACL injury^{9,12}. Importantly, psychological factors seem to have a stronger effect on a player's



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return to pre-injury sport than physical performance factors²⁵.

Like any aspect of decision-making in practice, understanding the player's psychological readiness to RTP should be based on accurate, repeatable outcome measurement. It does not help to guess the mentality of a player. Measures to quantify the player's mental readiness to RTP can help you monitor the player's progress during rehabilitation and to assess the mental readiness when the player is judged as being physically ready to RTP²⁶. This is especially important because for many players, physical and mental readiness to RTP do not coincide.

EXAMPLE 4: ADEQUATELY MONITOR WORKLOAD TO HELP PREVENT FUTURE INJURY

Inadequate preparation for the demands of sport might be one explanation for the high number of new knee injuries and surgeries following an initial ACL injury^{6,10,27-30}. Many ACL graft ruptures occur in the early (vulnerable) window after RTP^{6,10,19,31}. Data from professional football suggest that all players resume training after ACL reconstruction and 97% return to the same (highest) playing level⁶. However, some (4%) suffer a graft rupture during the final phase of the rehabilitation (after returning to training but before their first match minutes) or within 3 months after their first match back from injury (3%). One in every 10 players had new knee surgery during the final phase of rehabilitation or early after RTP.

The key question is whether the player is sufficiently prepared for the workload he or she will be exposed to after RTP. Depending slightly on the playing position, the average male professional football player runs around 11 km in a match³²; approximately 700 m of this is at high intensity (19.8 to 25.1 km/h) and approximately 250 m at sprint intensity (>25.1 km/h). In particularly demanding periods of the match, the player might be required to perform a high-intensity action every 15 seconds^{33,34}. How do you know whether the player has trained sufficiently to prepare for these demands?

Another important consideration for rehabilitation and fitness is tailoring the programme to the specific skill demands of

playing position, while concurrently training general performance characteristics such as acceleration, agility, co-ordination, balance, jumping and endurance. In times past, clinicians might have guessed when the player had done sufficient training to be ready to return to full competition. Now, there are far more sophisticated ways of quantifying the load on players. Load is not only the total distance run or the number of sprints made during a session (all examples of external load), but also the stress level, accumulated fatigue and sleep (all examples of internal load). Tools such as player wellness apps for phones and other electronic devices can be used to monitor and manage aspects of internal load. Rating of perceived exertion (RPE) – asking players to rate how hard the session they just completed was – is presently the best monitoring measure available³⁵. Many professional clubs routinely collect global positioning system (GPS) measures, which are combined with the session-RPE to give an overall quantification of workload (combined measure of internal and external load).

Acute spikes in load are unfavourably associated with injury³⁶. Therefore, it is important to know the player's chronic load (i.e. the average load over a period of time, often a 4-week block) and the acute load (i.e. the load in the current week). The acute:chronic workload ratio is one way of monitoring how loads are changing and can alert you to a sudden spike in workload. Increasingly, research is confirming that it is okay for athletes to train hard, so long as there are not drastic week-to-week changes in load³⁷. Load monitoring should therefore ideally occur throughout the final stages of rehabilitation and following RTP. Thinking of RTP as a continuum that runs in parallel with rehabilitation, can help you keep in mind that RTP starts from the moment the injury is diagnosed – all treatment is geared with this progression from participation to sport to performance⁹. Consequently, load monitoring and load management should be implemented throughout this continuum and the acute:chronic workload ratio should be calculated and monitored, not only when the player is back training, but also in the later stages of the rehabilitation, preferably during the on-field rehabilitation^{38,39}.

CONCLUSIONS

Remember your star player with the expiring contract, who tore his ACL at the end of last season's campaign? How would you – as a team clinician or practitioner – best tackle a situation like this? Among several still unresolved questions regarding the RTP process for a football player with ACL injury, we suggest that you at least should:

1. Acknowledge the importance of and practice, shared decision-making.
2. Combine both (minimum) time and objective discharge test criteria in the RTP clearance assessment of the player.
3. Ensure that the player is both physically ready and mentally ready to RTP.
4. Monitor and manage the workload that the player is exposed to during rehabilitation and will be exposed to upon RTP.

References available at
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