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**Section:** Original Research Report

**Article Title:** An Exploration of Sports Rehabilitators and Athletic Rehabilitation Therapists’ Views on Fear of Re-injury Following Anterior Cruciate Ligament Reconstruction

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“An Exploration of Sports Rehabilitators and Athletic Rehabilitation Therapists’ Views on Fear of Re-injury Following Anterior Cruciate Ligament Reconstruction” by McVeigh F, Pack SM  
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## **Abstract**

**Aim:** The aim of the study was to gain a greater understanding of the views of sports rehabilitators and athletic rehabilitation therapists on recognition of fear of re-injury in clients following anterior cruciate ligament reconstruction (ACLR). **Background:** Research involving long term follow up of patients following successful ACLR rehabilitation has shown return to sport rates are not as good as would be expected despite many patients having normal functional knee scores <sup>1</sup>. The psychological component, specifically fear of re-injury plays a critical role in determining patients returning to play, and is frequently underestimated <sup>2,3</sup>. Little is known about the recognition and intervention from the therapists’ perspective. **Method and design:** A qualitative approach, consisting of semi-structured interviews with a purposive sample of eight participants, sports rehabilitators or athletic rehabilitation therapists. This population has been largely unexamined in this context in previous research. **Main findings:** Thematic Analysis yielded two main themes: Communication and Education. Participants discussed the importance of communication in the Client-Therapist relationship and how it is used in addressing misinformation and fear of re-injury. All participants used education in outlining the rehabilitation pathway and dealing with those providing social support around the client. Issues emerged relating to therapists’ recognition of observable signs of fear of re-injury in the clinical setting. Overall, participants considered that fear of re-injury was not a barrier to return to play following ACLR. **Conclusion:** There is a need for more education for therapists on recognition of fear of re-injury and the appropriate use of psychological intervention skills as a method for dealing with this throughout the rehabilitation process.

**Key words:** fear of re-injury; anterior cruciate ligament reconstruction; psychological intervention skills; return to play; qualitative research.

The Anterior Cruciate Ligament (ACL) injury is a relatively common, serious injury experienced by recreational and high level athletes alike<sup>4</sup>. ACL injuries are estimated to affect 150,000-200,000 athletes in the United States every year<sup>5</sup> with an estimated 50% of these injuries receiving operative management<sup>6</sup>. The ACL injury is one that athletes often fear as it is almost always season ending, and may even be perceived to be career ending<sup>7-10</sup>.

Follow-up investigations of athletes following Anterior Cruciate Ligament Reconstruction (ACLR) have reported rates of return to play at pre-injury level of 45%<sup>1</sup>. The desire for athletes to return to competitive sports, especially those involving pivoting and cutting movements, represents a major indication for undergoing reconstruction surgery<sup>11</sup> therefore, a subsequent persistent low level rate of return to competition is an area for concern<sup>1</sup>. In one study approximately half of the athletes who did return to play following ACLR did not return to their pre-injury level<sup>2</sup>. Return to sport recommendations are varied and often the clinical experience of the therapist is fundamental in decision making<sup>12</sup>. There is a lack of objective functional criteria and additional quantification is needed to outline definitive return to play measures.<sup>13</sup> A lack of association between a functionally robust knee and return to play may be related to psychological variables, such as fear and uncertainty or external influences<sup>14,15</sup>.

Psychological difficulties among injured athletes are well documented<sup>16-18</sup> and the responsibility of addressing psychological issues during rehabilitation often falls on the therapist<sup>19</sup>. Rehabilitation therapists may also be ideally suited, given their regular contact with the patient, to provide various forms of social support<sup>17,20</sup> as it has been argued that therapists are often the first people to encounter and discuss emotional problems with patients<sup>16</sup>. Conversely, others researchers<sup>21</sup> have concluded that this should remain the domain of the psychologist and that it is unrealistic to expect therapists to deal with these issues, as they have neither the time nor the resources. The frequency with which sports rehabilitators and athletic rehabilitation therapists encounter various psychological problems in patients has not yet been thoroughly examined<sup>22</sup>.

Therapists have shown competency at recognising and addressing many psychological issues around rehabilitation<sup>17,18</sup>, although in this authors opinion fear of re-injury is rarely identified in the literature as a condition to be addressed by therapists during the rehabilitation process. Given that fear of re-injury has been outlined as a significant factor in determining return to pre-injury levels of participation following ACLR<sup>3,23</sup> this has real implications for practising therapists. It has been suggested that re-injury anxieties are a concern that should be addressed by the practitioner<sup>3,24,25</sup>. However, the specific role that therapists should play in this assistance has yet to be fully agreed upon. An important goal for therapists must be to identify early on any patients who may require psychological intervention so that this can occur in parallel with the physical rehabilitation<sup>3,17,26,27</sup>. Therapists must also be able to recognise that although an athlete may be physically ready to return to competitive sport, they may not be psychologically ready to do so<sup>7</sup>.

For therapists to be able to best serve and assist their patients towards the goal of return to play it is important for them to understand the complexity of factors, the interplay between the physical and mental which may determine their likelihood for return to play and what interventions are suitable for use during the rehabilitation process. Being aware of what assistance they can implement to avoid fear of re-injury can help them provide the best treatment for patients. Therapists need to be aware of this spectrum and continuum of mood and emotional response throughout the rehabilitation process in order to assess and gauge whether a patient is exhibiting a typical responses or responses that extend beyond typical responses<sup>28</sup> to the recovery process. Typical responses noted during the rehabilitation process include feelings of frustration, relief, guilt and apathy.<sup>29</sup> This study was undertaken to gain clarification and insight into ways in which therapists identify if there is fear of re-injury in patients they treat following ACLR. It also allowed therapists to recount their experiences of dealing with psychological issues in clients, and of seeking further assistance and referral where appropriate. Only once it has been understood why therapists

use or do not use certain intervention skills, can ways be suggested in which their skills could be improved to assist patients further<sup>30</sup>.

Research into the views of chartered physiotherapists, athletic trainers and physicians regarding psychological interventions and sport psychology education in the ACLR rehabilitation process has been completed<sup>16,22,25,31,32</sup>. Graduates of sport rehabilitation and athletic rehabilitation therapy programmes are trained to deal exclusively in the realm of sports and exercise medicine, therefore the opinions of these therapists is relevant to examine. However, no previous study has examined specifically sports rehabilitators and athletic rehabilitation therapists and their ability to recognise and deal with fear of re-injury following ACLR, therefore a gap in knowledge in the current literature existed. The aim of this study was to investigate if sports rehabilitators and athletic rehabilitation therapists identify fear of re-injury as a limiting factor in return to play following anterior cruciate reconstruction and where it was identified what processes are used to deal with it.

## **Methods**

Using a qualitative approach allowed a broader discovery and analysis of variables than would have been possible if a quantitative approach had been employed, and whereby the researcher aimed to report in a transparent manner<sup>33</sup>. Semi structured interviews were used to collect data, as this type of face to face interview allows for a standard set of questions to be covered whilst also being flexible for additional probing on topics, thereby affording insightful and in-depth data<sup>34</sup>. Thematic areas, e.g. fear of re-injury, return to play psychology and skills in psychology, developed based on previous work in the area<sup>17,19</sup>, were provided to the participants ahead of the scheduled interviews. All of the interview questions were framed in an open and broad manner<sup>35</sup>. Each of the participants was given freedom to express themselves and probed to expand on answers with prompting, aiming to gather rich and detailed data<sup>36,37</sup>.

## PARTICIPANTS

A purposive sample of members of the British Association of Rehabilitators and Trainers (BASRaT) and the Athletic Rehabilitation Therapists Ireland (ARTI) was selected; the spread of membership is shown in Table 1 below. As this population was previously unexamined purposive sampling was chosen. Members of the professional organisations may hold a range of undergraduate qualifications therefore the term ‘therapists’ was used to refer to the group as a whole. Participant recruitment took place via “Invitation to Participate” email which was sent to all members of BASRaT and ARTI. The study was reviewed and given ethical approval consent by the University Ethics Committee.

For participants to be included they were required to be Sports Rehabilitators or Athletic Rehabilitation Therapists based in the Republic of Ireland, holding a professional membership of BASRaT or ARTI. Participants were excluded if they had not worked with ACL reconstruction rehabilitation. Participant recruitment took place over a four month period and continued until the point that saturation of data, within the aims of the study, had been reached. With coding being completed consecutively with interviews, the point at which no new data or relevant information emerged with respect to the research aim was deemed to be saturation point. This resulted in eight participants being recruited, six male and two female with experience of working with patients since graduation ranging from three to thirty years. Demographic information available on participants is shown in Table 1 below.

## Procedures

Following a detailed and stringent application process, ethics approval was granted by the University Ethics Committee ahead of the commencement of the research process. This process involved a detailed application form submitted for approval by the Committee and relevant adjustments to the research proposal made prior to consent being granted. [

Seven hundred and eighty members from both professional organisations were sent an “ Invitation to Participate” email. Eighteen responses were received; two were excluded due to location leaving a potential fourteen participants, of which eight were interviewed. Participants were chosen initially on the basis of order of response and then on availability to meet for interview. Preference was given to participants where travel was less than 75 miles in order to minimize costs. All interviews were carried out by the primary researcher, an MSc student with only the researcher and the participant present. A tape recorder was used, with the participants’ consent. A pilot interview was completed and a few minor adjustments were made from that pilot interview when it was identified ways in which the researcher may have influenced the data. Upon issue identification, adjustments were made to the phrasing of questions and responses e.g. referring to clients as “suffering” during ACLR, that type of negative terminology was avoided in subsequent interviews.

Semi structured interviews were used to collect the data, these type of face to face interview allow for a standard set of questions to be covered whilst also being flexible for additional probing on topics, producing insightful and in-depth data<sup>34</sup>. The style of the interviews was formal but relaxed, wherein participants construed themselves as colleagues engaged with a researcher in sharing information on the topic. The semi-structured interviews covered thematic areas which were provided to the participants ahead of the scheduled interviews. This semi-structured interview guide was developed based on the work of Heaney (2006) and Jevon and Johnston (2003). Interview thematic areas were based around fear of re-injury, return to play psychology skills in psychology and referral. Questions were designed to avoid yes/no responses and elicit descriptive response asking participants to “outline” and “describe”. Questions were broken into the thematic areas of Fear of Re-injury, Return to Play- Psychology, Skills in Psychology and referral for psychological intervention Examples of questions included Can you provide some examples of observable signs of readiness to return to play? ; Do you feel your professional training prepared you fully for your current role and having to deal with psychologically issues? . All of the interview questions were



framed in an open and broad manner<sup>35</sup>. Each of the participants was given freedom to express themselves and probed to expand on answers with prompting, aiming to gather rich and detailed data<sup>36,37</sup>. Interview questions were checked with the research supervisory team, and the wording of some questions were amended following input from the research supervisory team and the pilot interview.

Interviews were transcribed verbatim, in parallel with data collection. Transcribing whilst continuing interviews gave an indication of when saturation of the data was reached without having to wait until coding took place. All transcriptions were edited to ensure anonymity of the participants and their professional colleagues and clients.

#### Data Analysis

A thematic analysis was used for data analysis due to its flexibility, this method identifies, analyses and reports patterns emerging from the data<sup>38</sup>, whereby themes or categories are allowed to emerge from the transcriptions<sup>39</sup>, with a clear methodological approach<sup>40</sup>, a process that requires continual reflection<sup>36</sup>. One of the core benefits of thematic analysis is that it does not require a detailed theoretical and technological knowledge base, making it an accessible form of analysis<sup>38</sup>. Thematic analysis does not subscribe to one underpinning methodology and can be applied in various theoretical schema, it is an analytic method<sup>41</sup>. By using this approach the researcher aimed to explore the understanding of issues, and report experiences, meanings and reality of the participants<sup>38</sup>, providing a mirror reflection interpretation, keeping within the realms of a Realist approach

Transcripts were read line by line to build on the in-depth familiarisation from transcribing and there was noting of key information points, coding for important themes and categories. The principle researcher coded the data from the open-ended interview questions according to the principles laid out in the Attride-Stirling’s (2001)<sup>40</sup> Model of Thematic Analysis. The analysis and coding was confirmed and agreed with a research supervisory team, who were blinded to the

researchers’ categories. Coding was judged to be complete when no new themes or concepts emerged from the data, the point of theoretical saturation <sup>19</sup>.

## **Results**

The semi-structured interviews with the therapists exploring the area of recognition and incidence of fear of re-injury following ACLR raised key themes. Following data analysis superordinate themes of Communication and Education emerged. Communication was further broken down to the Client- Therapist relationship, dealing with misinformation and fear of re-injury. Education plays a role in dealing with coaches and managers and setting the outline of the rehabilitation process.

### Communication

Communication takes many forms in the clinical setting and it is a fundamental instrument in how therapists and clients relate to each other to achieve the therapeutic goals. Therapists use communication to build the client therapist relationship, deal with the correction of misinformation and worries client’s have about re-injury.

#### Client therapist relationship

The client-therapist relationship is critical in sports injury care, with the therapist potentially acting as both a clinician as well as an educator. Establishing this additional role, however, must begin early in the rehabilitation pathway. The therapist is a central part of intervention in injury rehabilitation, and teaching and communication are considered integral to this process <sup>39</sup>. Some of the therapists interviewed for the current study used education to set the tone and outline the rehabilitation pathway to the client and also, it seems, to affirm their position in the therapist client relationship:

*Well education is a main, is a huge aspect to it, you know, once, once you get into the nitty gritty with the players that the benefits of the operation, the success rates of the operation, the importance of proper conditioning, and proper monitoring of their, of their potential future risk factors providing they keep all those boxes*

*checked, things tend to settle down pretty quickly and they become confident in your own ability as a practitioner. - PIC008*

This action of educating the patient at the onset of the rehabilitation was common amongst all therapists and they appear to use it as an opportunity for setting out the expectations and pace of the rehabilitation. This has been shown to be a widespread and effective approach to engaging clients in their rehabilitation<sup>42 43</sup> and athletes often feel the need to be educated in the rehabilitation process<sup>44</sup>. According to personal investment theory<sup>45</sup>, athletes need to have a good knowledge of treatment in order to believe in its efficacy. Patient education, defined as the process of imparting information to patients with a view to altering the health behaviours<sup>46</sup>, is an effective tool for management of patients leading to increased compliance and patient satisfaction<sup>47</sup>, by informing and educating patients it allows them to make informed decisions and become active participant in their rehabilitation<sup>48</sup>.

Furthermore when athletes are educated about the nature of the injury, goals of prescribed treatment and the prognosis of recovery, they are better able to understand how their injury can impact on their personal goals<sup>45</sup>. This is reflected in one respondent’s thoughts on explaining details to the client:

*The more it is explained to them, laid out in front of them, show them what they have to do to be involved in that programme the less problems that you have... But generally with a good education programme and hands on, talking to him, involving him in it I don’t have that much difficulty to be honest.... - PIC002*

#### Dealing with misinformation

One of the key tasks that therapists found themselves responsible for was the correction of misinformation and misconceptions that clients have surrounding the ACL injury and the ACLR rehabilitation. Therapists noted that clients tend to have a misunderstanding of the requirements for the ACLR rehabilitation, as well as incorrect ideas about causative factors for the injury, unrealistic expectations about the time it will take to return to play or their rehabilitation performance when benched against their peers.

*But again there is that sort of whole misinformation around it as well, like you know. I have certain players and they will say is it because I wore these certain type of boots or because we did this type of training... exactly yeah that's the biggest thing, so anyway you might have, just as you said, kind of educate them. -PIC004*

A source of this misinformation is reported to be media opinion of the ACL injury, especially in relation to high profile athletes, mirroring findings by Webster et (2008)<sup>49</sup>. This high level of coverage of this particular injury fuels misconceptions about the time it takes to return to full play following ACLR. Given the media focuses on professional or semi-professional athletes, who have access to intensive rehabilitation that may allow them to return to play in shorter timeframes than recreational athletes, the main client base of the therapists interviewed, these preconceptions are understandable. Misconceptions about time frame for return to play was mentioned by all of the participants and frequently had to be corrected at the outset of the rehabilitation journey.

*And you know I find that tends to be the biggest thing about educating them about the injury themselves... because as I said it is such a highly publicised, there seems to be so much information. - PIC 004*

Outside of the media, clients come with misconceptions from information they have garnered from their peers and on the Internet. Importantly, this is not a problem which presents solely in the sport injury domain. Physicians have found that Internet information often generated patient misinformation, leading to confusion, distress, or an inclination towards detrimental self-diagnosis<sup>50</sup>. Therapists in this study allude to similar challenges in relation to patients during ACLR rehabilitation.

*But there is a huge amount there, but I don't think its taken, even though all this information is out there in terms of people, the media reports on it, you know, the information that is there either on the Internet or you know and it is available through so many many sources, that it still, it's a deeply personal thing for any athlete like you know and that they really, they need the kind of the guidance. - PIC005*

Overall, therapists find themselves dealing with informing clients about the intricacies of the surgery and the recovery period as well as having to clarify misconceptions that often present, most commonly in relation to time-frame for return to play. Educating injured patients about their particular circumstances is an important step in the rehabilitation process<sup>42,51</sup>. This education

element appears to be a key focus of the early post-operative rehabilitation for all of the participants in this research.

### Fear of re-injury

The initial research question for this study was to investigate if sports rehabilitators and athletic rehabilitation therapists identify fear of re-injury as a limiting factor in return to play following anterior cruciate reconstruction and where it was identified what processes are used to deal with it. Educational intervention emerged as the therapists preferred method of dealing with fear of re-injury. Most therapists referred to fear of re-injury as presenting in early stage rehabilitation, often in the immediate post operative phase and associate it with pessimism, linking it to pain, immobility and lack of function. Straightforward education challenges the uncertainty caused by misinformation and can effectively diminish fear. These findings are similar to those of research by Podlog and Eklund (2006)<sup>15</sup> who found that a source of stress may be that athletes have been unable to perform their skills for a long period of time. Where fear was identified it seemed to dissipate as movement returns and achieving of goals increases.

*I'd say from the early stages are because of the pain, the soreness, they are very pessimistic at the start. So I would say they are more pessimistic at the start, because they are just unwilling to, the fear of injury, the fear of re-injuring it I think is probably initially at the start. PIC006*

In early stages therapists in this study use goal setting as a means of counteracting and dealing with any of these presentations of fear or apprehension and spend a lot of time on education with the client.

*I think you can minimise the amount of psychological distress and emotional stress that they'll go through because by doing your goal setting and explaining what they are going to experience and so on. PIC005*

Education, having beneficial effects in adaptive change of fear of re-injury can be used as an intervention. If used effectively in the rehabilitation process by the therapist with both the patient and the coach then fear of re-injury might be reduced and is less likely to be a barrier towards a return to competitive sport. It is important that therapists intervene at this early stage as fear of re-

injury could potentially hold patients back from fully engaging in all aspects of rehabilitation possibly leading to poorer functional outcomes<sup>2,4,52</sup>. It is positive that participants identified and intervened at early stage fear of re-injury to prevent issues later in the process. Therapists noted that elements of fear do present in later stages but these tended to be associated specifically in relation to the mechanism of injury. This reflects research findings in Carson and Polman (2010)<sup>53</sup> who discuss the fear of contact or of going through the event that caused the ACL rupture initially. PIC003 and PIC006 also refer to this:

*But the fear of going back to the mechanism that happened. - PIC003*

*I think the fear of re-injury, you know it's a traumatic injury, some people have had very traumatic others didn't realise they had done their ACL, so I think that varies in how traumatic the incident that occurs initially and I think that will have a strong bearing then on the fear of re-injury in that aspect.- PIC006*

Monitoring of presentation of fear of re-injury was something that therapists did note. This monitoring at the time of transition back to full sports was needed to ensure that athletes felt adequately supported in their return to sport<sup>27</sup>. All the respondents made reference to placing a large emphasis on assessing a client's psychological readiness to return to play in late stage rehabilitation and said that they considered fear of re-injury when deciding readiness to return.

*Before you enter that pitch because it is I think it is a very important step in the full rehab of the player so I do place a good a nice important emphasis on the psychological status of an athlete in relation to fear of injury and all that. - PIC001*

However despite the emphasis that therapists place on considering psychological issues when it comes to discharging players to return to play, none of the respondents had any method of formally assessing this, ever document any reference to it in their clinical notes or seem to be very specific as to how they come to their conclusions of assessment other than by experienced observations. Nevertheless, these observations whilst experienced are uninformed, given that therapists do not have the proper training to know if what they are doing is correct. Too often subjective clinical impression is the determinant for return to play after ACLR<sup>13</sup>.

In summary the overall sense from the therapists was that fear of re-injury was something that presents, predominantly in early stage rehab, but it is seen as a normal, manageable reaction, dealt mostly with by educating the patients and making adjustments to the goal setting interventions. The lack of fear of re-injury may possibly be explained as a response to participants who were extremely optimistic and proactive in their approach to the injury and rehabilitation process<sup>54</sup>. None of the therapists felt they ever had a client who had not returned to play on the basis of fear or re-injury. Even in clients who had a repeat ACL re-injury, where anxiety can be more prominent, fear of re-injury still did not present as a barrier to returning to play.

### Education

Education underpins the client-therapist relationship, is key to interventions, and it imparts the necessary skills and knowledge that practitioners utilise in the clinical setting. Lack of information around the ACLR surgery and rehabilitation contributes to psychological issues such as fear of re-injury and pessimism; this is redressed by educating clients. The social support system of the client is important in the rehabilitation process and education is needed in dealing with some influential people in these relationships.

### Education of Coaches/Managers

Outside of the direct relationship with the client, the participants were often responsible for educating coaches, managers and other auxiliary staff on the rehabilitation progress. Several participants referred to dealing frequently with coaches and managers, which can be an important part of an athlete’s rehabilitation. Injured athletes can experience feelings of isolation from teammates and training staff, and coaches need to provide sufficient support and guidance during rehabilitation<sup>20</sup>, particularly as athletes perceive support from others to be important throughout the recovery process<sup>54</sup>. Many clients need to maintain a sense of belonging and feeling part of the team as a buffer against feelings of alienation<sup>20</sup>. By engaging coaches and managers, therapists can influence the client’s perception of their isolation and identity during rehabilitation, and this support

can enhance their successful return to play<sup>53</sup>. Therapists appeared to be aware of this method of minimising isolation for clients by engaging with and informing coaches and managers, and used it as a means of steering a client’s rehabilitation when they are not being monitored directly:

*I think for most of the team players like there is a big responsibility on the coaches and on the managers of the teams... In our set up here we’ll say we would often spend time on the phone with coaches and managers of the teams saying ‘this is where this person is and this is what we want them to do ‘ and so on and I think it is the easiest option really of all. - PIC005*

Communicating with the coach to inform them of the player’s progress during the final stages of rehabilitation can also be constructive in avoiding undue pressure being put onto the player. Coaches have been shown to be a source of application of external pressure on athletes to return to sport after injury before they are physically or mentally ready<sup>55</sup>. Discussions with clients and coaches regarding the detrimental consequences of premature return such as the risk of re-injury or poor performance may be useful in encouraging athletes to take their time in recovering and returning to full activity<sup>20</sup>. Also from a practical standpoint coaches need to be made aware of athlete tendencies toward self imposed pressures to return to sport in order for appropriate intervention efforts to be taken:

*The coaches need education too, to say listen he might be able to complete fully in a training session but like training he needs to progress into a match, 15 minutes, 20 minutes even for their confidence or whatever .- PIC003*

These players’ self imposed pressures can also be season dependent and therapists found they can come up with problems when recovery time does not match up with the competitive calendar and clients want to return to play when perhaps they are not completely ready from either a physical or psychological perspective. Therapists felt that coaches and managers also had a role to play in fuelling or dissipating these pressures. Coaches possess a clear awareness of how time pressures to be ready for a particular competition influences the athlete’s perception of where they felt they should be in relation to a competition calendar<sup>56</sup>. Therapists attempt to counteract the coaches’ influence on return to play by educating and informing them:



*You might have to have a word with the, a manager, especially if a manager is trying to drive it on and saying ‘look I need this player back we have got a major game comin up, he really has to, we need him’ and you have to say ‘look he’s not ready, you can’t go playing him just yet, do you want to be responsible for z, y and z going.-*  
PIC007

Consequently the remit of the therapist reaches outside of what occurs during the client-therapist contact time in clinical sessions, and all participants recognised the need to engage with other influential people (e.g. coaches, team managers) who may sway the outcomes of the rehabilitation.

### Outlining Rehab Protocol

A study looking at rehabilitation adherence found that athletes felt that one of the crucial things the therapist needed to do was to explain things clearly to ensure understanding<sup>51</sup> and that this increased understanding boosts adherence to rehabilitation, which is beneficial for both the client and the therapist. In this study therapists allude to using education as a specific intervention when dealing with psychological issues and infer that it is constructive in keeping clients motivated.

*I keep relating back to the fact of...relating back to education, if you, if you can relate to previous examples of successful... I think that, in its own right, has a huge bearing on the psyche, in the makeup of the athlete you know in their mental state going forward.-* PIC008

Several strategies such as education, treatment efficacy and social support have obtained preliminary empirical support for their role in facilitating rehabilitation adherence<sup>42</sup>. Increasing athletes belief that the treatment will achieve desired goals, and enhances treatment efficacy<sup>57</sup>. Using positive reinforcement about goal attainment sustains motivation and adherence to rehabilitation protocols<sup>42,45</sup>.

In preparing the athletes for the required level of work and commitment following ACLR, education is paramount and has been identified by participants as one of the key interventions they use. Previous studies showed that most athletes lack psychological preparation for the injury and so there was no strategy to deal with the lengthy rehabilitation period<sup>58,59</sup>. This is where educating the patient about what they can expect can be effective. Many of the therapists referred to clients

under-estimating the difficulties that were ahead of them and felt that many athletes thought once the surgery was over that the hard work had been done, when in fact it was only just beginning:

*The one that I would mainly revert back to and the one that I would be most confident in is just education ...education for the athlete and just breaking it down because I just think as therapists we would take a lot for granted as to how much the athlete does or doesn't know... I would just use education I haven't used any... I don't think I used any other psychological interventions, any visualisation or anything like that really” -PIC003.*

Clients are educated about the kinds of psychological and physiological issues that they may encounter during the rehabilitation. Informing injured athletes about possible consequences of their emotions and behaviour can help to dissipate irrational thoughts and feelings that result primarily from a lack of understanding<sup>26</sup>. ACL injuries are associated with a range of negative psychological and emotional responses<sup>27</sup> and there is reference to clients exhibiting a grief response to their injury, a recognised reaction to injury<sup>28</sup>. The therapists confirmed that they take great care in outlining each part of the physiological and psychological process in a format that clients are able to understand:

*We can work on it step by step and that you will see yourself, like you know I would just explain that whole process to them and you know not just the physiological adaptations of it but the whole psychological, the DABDA, the fact that they are in denial at the moment and that they will go on to accept it. I just think that the education is a huge part of it.- PIC003*

## **Discussion**

The aim of the study was to gain a greater understanding of the views of sports rehabilitators and athletic rehabilitation therapists on recognition of fear of re-injury in clients following anterior cruciate ligament reconstruction (ACLR). It also aimed to investigate if sports rehabilitators and athletic rehabilitation therapists identified fear of re-injury as a limiting factor in return to play following ACLR, ultimately finding that participants did not acknowledge fear of re-injury as being a significant barrier in returning to play following ACLR reconstruction.

When questioned directly about fear of re-injury, therapists did not note this as an issue for concern, yet when elaborating on issues that arise with clients, they made reference to fear of re-

injury and associated feelings. Observable indications of fear or re-injury include heightened negativity around rehabilitation tasks<sup>20</sup>, or hesitation, holding back and less than maximal effort during training and drills<sup>4</sup>. These behaviours were acknowledged by the participants but none identified them as being expressions of fear of re-injury in their clients, raising the question as to whether therapists pick up non-verbal communications around fear of re-injury. .

Where fear of re-injury and pessimism did arise, it is most likely to be in the early stages of rehabilitation. Therapists felt that the key psychological turning point, indicating a shift from a negative to positive mindset and higher levels of self-efficacy regarding the knee, is a return to jogging or running. Reported factors which play a role in determining clients’ likelihood to resume play include age, gender of the patient, and level of participation prior to injury, less experienced athletes have been found to have a lower rate of return to sport<sup>11,27,60</sup>.

Although not comprehensively assessed the rates of return to play in the client base of these therapists seemed very high, with most saying the vast majority of their clients returned to pre-injury competition level, one stating ninety per cent return rates. Although investigations of athletes after ACLR have reported rates of return to play and participation at pre-injury level at 45%<sup>1</sup> and 63%<sup>61</sup>, the therapists in this study did not have experience of rates as low as this with only one participant suggesting that one-third were non-returners. Participants in this research purport that recreational athletes are less likely to go back than higher level competitive athletes and that older patients may not be as likely to return as younger patients. Additionally, work and family commitments are influential<sup>11</sup>. Given that the majority of the therapists felt that most of their participants were returners, the demographic of their client base should possibly be considered and compared with earlier studies. With therapists’ responses in the study not mirroring the literature the question must be raised as to whether they have a full understanding of fear of re-injury and the related psychological constructs, given this finding this is an area warranting additional investigation and research. Where return to play does not take place, therapists felt that factors other than fear

of re-injury have more influence such as the original participation level of the player, the age demographic and other external influences such as work or family relationships and that ultimately fear of re-injury is not a barrier to return to play.

The role of education cannot be underestimated in the continuum of the rehabilitation whether that is the informal learning of the clients or the formal education of therapists. Therapists recognise the need to educate the clients appropriately about the injury and the rehabilitation and treatment rationale. Incorporating a team approach is also vital, involving and informing the athlete’s coach or manager in the rehabilitation process particularly in the later stages. Where fear of re-injury occurs in rehabilitation, education could be used as an intervention to deal with it and if used effectively in rehabilitation by the therapist with the client and the coach, then it might be reduced<sup>62</sup> Communication plays a key role in the interactions between the client and the therapist. To date very little research into the patient physiotherapy interaction from a communication perspective<sup>63</sup> Examination of the patient perspective in private has to date received scant attention<sup>63</sup> and this is an area from a verbal and non-verbal perspective that warrants additional research. The initial meeting of the first encounter in clinic has been explored and the therapist and clients usually unconsciously establish self –presentation, role ascription and role formation when it would have been of greater benefit if communication were part of the conscious agenda<sup>64</sup> The most important attributes of the physiotherapists from the patients perspectives relate to the physiotherapists interpersonal skills manner and teaching ability<sup>63</sup>.

All participants in this study indicated the significance of psychological aspects as part of the ACLR rehabilitation process. The therapists believe it is necessary to address the psychological impact of the injury and deal with “*the psychological fragility of the cruciate mind*” (PIC008). However, due care needs to be taken in relation to competence boundaries. A multidisciplinary approach may be preferable in order to optimise best practice treatment for the injured athlete, although referral to appropriately qualified sports psychologists was lacking.

## Methodological Considerations

Using a qualitative approach allowed a broad discovery and analysis of variables. However, this approach presents novel challenges in relation to ensuring rigour and hence the trustworthiness of the research and its findings<sup>65</sup>. To ensure value in qualitative research, methodological rigour must be demonstrated from design to field work to analysis<sup>40</sup>. The researcher as a central figure has been considered as a potential source of influence on the data collection and selection process<sup>66</sup> so it is important for a researcher to approach a study without prejudice<sup>67</sup>. As a researcher who is also a therapist, the potential to influence the research outcome was acknowledged in an attempt to eliminate this influence as much as possible. It was imperative that the researcher did not influence the interviewees based on biases and assumptions on the topic.

Trustworthiness of the data is an important consideration in qualitative research; whereby the presentation of the data is consistent with the participants’ experiences and the context in which they occurred<sup>39</sup>. The creativity, sensitivity, flexibility and skill of the researcher determines the reliability and validity of the study<sup>68</sup>. As the analysis of qualitative material is a necessarily subjective process<sup>40</sup>, avoiding researcher bias when assigning codes and themes is a concern for researchers<sup>39</sup>. It is generally assumed that the unique perspective of the individual researcher will shape the analytic process<sup>69</sup>. Ahead of coding a note was made of key words expected to be found. On checking back to see if researcher bias was in fact to be found some of the key words did appear but not to the extent anticipated prior to coding, and no changes were required to be made to the coding. This reflexivity is particularly important within the qualitative context<sup>70</sup>.

As practical strategies for enhancing quality in qualitative research based on the criteria developed by Guba and Lincoln (1985), the following techniques were employed:

Credibility: Transcribed interviews were sent to interviewees for checking; this ensured the information had been accurately recorded<sup>71</sup>. The thesis supervisor peer-reviewed the data analysis and suggested amendments were made; this and the use of direct quotes enhanced credibility<sup>67</sup>.

**Transferability:** In the selection of participants, it was considered that purposive sampling minimised the possible bias arising from convenience sampling and improved the chance of collecting rich data relevant to the behaviour being studied<sup>71</sup>. It can also sharpen the focus on endorsing previous research themes carried out on the same subject. By using purposive sampling, the specificity of the relevant population for the findings was demonstrated, however a qualitative approach would not always produce results which are transferable to the whole population group<sup>71</sup>. This was one of the primary aims of the study, given that this specific population of therapists had not previously been examined in this research context.

**Dependability and confirmability:** Firstly, in preparation for the interviews, the thematic areas were gathered from previous research into the subject areas. Secondly, using a detailed process of data collection, depicted how findings had been determined. Also, clearly documented coding of the transcriptions enhanced the reliability of the data analysis and provided an audit trail. This access to the “paper trail” enables other researchers to repeat the procedures of this project as closely as possible.

## **Conclusions**

The intention of this study was to highlight therapists’ experiences and challenges relating to fear of re-injury and ACLR rehabilitation. No evidence was found of therapists recognising fear of re-injury as a limiting factor in return to play following ACLR. However, a conclusion could not be drawn as to whether fear of re-injury did not exist or whether it wasn’t on therapists’ ‘radar’ despite them being knowledgeable about it but simply unskilled in identifying its manifestation. Any references to fear of re-injury are in the early stage of rehabilitation and are not influencing return to play. Therapists felt they did not have the sufficient training to employ psychological intervention skills after ACLR. Nonetheless, referrals to sports psychologists did not appear to occur, perhaps leaving these issues unresolved. Communication and education are fundamental tools for the therapist in

establishing a client therapist relationship and setting out the plan for the rehabilitation as well as dealing with issues that may arise.

Areas requiring further investigation identified from this research include assessing therapists recognition of characteristics of hesitation to return to play and fear of re-injury. The capability of this group for implementing psychological interventions in the clinical setting was not assessed and could be explored further. Lastly, there is a lack of a validated tool for assessing readiness to return to sport following ACLR and this too could be researched in this therapist population.

Despite limitations, the findings of the present study shed light on the opinions of Sports Rehabilitators and Athletic Rehabilitation Therapists in the area of recognition and intervention in psychological reactions to major injury and rehabilitation. All participants acknowledged a deficit in their skills for dealing with these psychological reactions. It is hoped that the findings of this study can constitute a knowledge base for therapists, particularly those in their career infancy, and encourage them to be sensitive to patients’ psychological requirements during ACLR rehabilitation.

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**Table 1,** Research participant’s years since qualification, level of qualification and professional membership.

Unique Identifier	Years Since Qualification	Highest Qualification	Professional Membership	Type of Practice	Patient Population
PIC001	10	BSc	BASRaT / ARTI/ CSCS	Private Sport Injury Clinic- single therapist	Sporting population with some non-sporting patients
PIC002	30	BSc	NATA/ ARTI	Private Sport Injury Clinic- single therapist	Sporting active patients, covering team training sessions
PIC003	3	MSc	ARTI	Multi disciplinary clinic- numerous practitioners	A mixed patient population with physically active and general population
PIC004	4	MSc	BASRaT/ ARTI	Private Sport Injury Clinic- single therapist	Sporting active patients, covering team training sessions
PIC005	18	BSc	NATA/ ARTI	Multi disciplinary clinic- numerous practitioners	Sporting active patients, covering team training sessions. Members of general public also
PIC006	10	BSc	BASRaT/ ARTI/ CSCS	Sport Injury Clinic- two therapists	Sporting active patients, covering team training sessions
PIC007	10	BSc	BASRaT/ ARTI	Sport Injury Clinic- two therapists	Sporting active patients, covering team training sessions
PIC008	11	BSc	BASRaT/ ARTI	Private Sport Injury Clinic- single therapist	Sporting active patients, covering team training sessions. Members of general public also