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Sports injury management. physiotherapists' attitudes and perceptions of sports psychological interventions

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Abstract

All athletes get injured at some point, with this hindering performance and disrupting the individual's daily routine. In their quest to heal the injury physically, physiotherapists often overlook the psychological aspects and, this can be a limiting factor in athletes returning to play (RTP) confidently. This qualitative study explores the perceptions and attitudes physiotherapists hold regarding the use of psychological interventions during rehabilitation as research in this area is limited. Six physiotherapists were interviewed to gather an in-depth understanding of their knowledge and experiences. Data was analysed using Thematic Analysis (TA). The main themes that emerged were: physiotherapists' injury perception; factors influencing an injury; lack of psychological interventions; professional versus amateur; and psychological interventions employed. All physiotherapists were well-informed regarding the psychological effects of the injury on the athlete and how such effects influence rehabilitation and performance upon RTP. However, results indicate that the use of psychological interventions in sports rehabilitation is still lacking. Participants noted a lack of resources and knowledge on the subject; time constraints as well as the topic being underestimated as possible reasons for this. Five out of the six physiotherapists interviewed have liaised with a sports psychologist and seen a change in pre and post-psychological interventions. The results of this study imply the need for physiotherapists to be educated further regarding the use of psychological skills for rehabilitation as well as for sports psychologists to be better embedded within a clinic or club's medical team.

Keywords: Athletic injury, psychological effects, rehabilitation, sports psychologist, an interdisciplinary approach

Introduction

Despite sports having so many benefits, athletes inevitably are at risk of injury (Arvinen-Barrow & Walker, 2013)^[7]. Athletes may experience several emotions including denial, anger, anxiety, depression, and decreased levels of confidence (Walker *et al.*, 2007)^[47]. One may feel overwhelmed at being unable to continue participating, and, thus, rehabilitation and perception of future injuries are affected (Podlog & Eklund, 2010)^[39]. Consequently, athletes are rarely on the same level of mental and physical preparation for RTP (Tibbert *et al.*, 2015)^[46].

Several theories explore many factors of a psychological nature that affect rehabilitative goals (Walker *et al.*, 2007)^[47], highlighting the importance of taking a holistic approach and understanding athletes' responses to injury since the athlete's confidence and identity may be affected negatively (Borg *et al.*, 2021)^[9]. Athletic identity is an integral part of who the athlete is (Reese *et al.*, 2012)^[40], especially in the case of professional athletes who may see themselves as being solely athletes. It is seen to affect how an athlete evaluates self-worth and ability, and the need to be recognised in society through sport (Borg *et al.*, 2021)^[9].

Despite physiotherapists showing some understanding of the psychological interventions that may be utilised during rehabilitation, many report having little education on the subject (Arvinen-Barrow *et al.*, 2010)^[6] and feel unprepared to employ such techniques (Alexanders *et al.*, 2015)^[1]. Moreover, although several physiotherapists refer athletes to a sports psychologist if rehabilitation becomes more complex (Heaney, 2006)^[24], a stigma often exists, with several athletes finding it difficult to disclose that they would benefit from psychological support (Arvinen-Barrow *et al.*, 2014)^[5].

Thus, the athlete needs to be physically and psychologically ready for the sport demands one will face. When attention is given solely to the physical aspect, ignoring the psychological aspect and the disruption to the athlete's daily routine, this may lead to the sporting career

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being terminated (Covassin *et al.*, 2015) ^[16]. As a result, Arvinen-Barrow *et al.* (2007) ^[4], put forward some suggestions:

1. Conducting research to identify and assess physiotherapists who do apply psychological interventions.
2. Attempting to create better coordination between the sports psychologist and a physiotherapist by exploring good practice.
3. Analysing what could be the best ways to deliver training on the use of psychological interventions in rehabilitation.
4. Exploring the need for an applied module in sport and exercise psychology in physiotherapy undergraduate and postgraduate courses (Arvinen-Barrow *et al.*, 2007) ^[4].

Thus, the main aim of this study was to explore physiotherapists' knowledge, perceptions, and attitudes toward engaging in psychological interventions during injury rehabilitation, since having a multidisciplinary approach may accelerate rehabilitation (Arvinen-Barrow & Walker, 2013) ^[7]. This study may also increase awareness of this often-overlooked area, its importance often underestimated (Arvinen-Barrow *et al.*, 2007) ^[4].

An Injury's Psychological Effects

The sudden absence of the training routine can cause athletes to perceive an injury as being a traumatic event (Mainwaring *et al.*, 2010) ^[29]. Injured athletes are put in a situation where they need to adapt to the ongoing demands, putting their energy into rehabilitation rather than playing sport.

Getting injured is often seen as stressful, and many emotions may come into play; these could include fear of the unknown; anxiety; loss of confidence and identity amongst others (Covassin *et al.*, 2015) ^[16]. The athlete may feel stressed trying to get fit again, being able to train but not seeing improvements (Evans & Hardy, 2013) ^[20]. Anxiety may not only be in physical aspects but in social aspects too, such as: being left out of the team plans as well as pressure from others to RTP (Evans & Hardy, 2013) ^[20]; attempting to maintain their name in sport; or being replaced by others of lesser ability (Covassin *et al.*, 2015) ^[16]. Athletes may experience feelings of guilt and of being ignored (Podlog & Eklund, 2010) ^[39]. They may worry about their performance when they are uncertain whether the injury was responsible for them not being included in the team. This may affect future opportunities in the sport (Covassin *et al.*, 2015) ^[16]. Despite this being a negative situation for them, it is also felt by several athletes to be a learning process for self-awareness (Davis *et al.*, 2017) ^[17]. Re-injury fear is often associated with injuries, especially, closer to the RTP period (Hsu *et al.*, 2017) ^[26], as a result, reducing the athlete's participation. It may relate to the athlete experiencing kinesiophobia (Hsu *et al.*, 2017) ^[26]. McCullough *et al.*, (2012) ^[32] found that in fifty percent of Anterior Cruciate Ligament (ACL) reconstruction surgery patients', fear of re-injury led them to discontinue participation in their sport.

Athlete's Response to an Injury

The injury creates an absence for the athlete and the Grief Response Model proposes that the grieving process' onset is similar to that experienced when individuals suffer from bereavement, disability, and illness (Walker *et al.*, 2007) ^[47]. The Kubler-Ross Stage Theory states that we progress

through the five stages of grief: denial; anger; bargaining; depression, and acceptance (Arvinen-Barrow & Walker, 2013) ^[7]. However, different individuals may pass through these emotional stages at different rates, one stage possibly being more prolonged than others or not present at all (Walker *et al.*, 2007) ^[47]. Thus, this theory may lack factual precision and be originally formulated from studies on terminally ill patients, rather than in a sports setting. Due to these limitations, the cognitive appraisal model was seen to be more appropriate for understanding psychological responses to injury (Walker *et al.*, 2007) ^[47].

The cognitive appraisal model looks at injury as an added stress in the patient's life, causing feelings and behaviours which affect rehabilitation (Roy *et al.*, 2015) ^[41]. Athletes are seen to react to injuries in different ways (Walker *et al.*, 2007) ^[47]. On the other hand, it looks at how the person evaluates an injury as determining the psychological response (Stango & Walinga, 2014) ^[45] with different individuals manifesting different reactions to the same injury. Perception of injury, thus, is seen as affecting the psychological response (Walker *et al.*, 2007) ^[47] and appraisals are seen to impact the athlete's coping skills (Stango & Walinga, 2014) ^[45]. Athletes will cope in different ways due to personalities, situations experienced, and their perceptions of them (Walker *et al.*, 2007) ^[47].

Wiese-Bjornstal *et al.* (1998) ^[48], believe that the grief response model and the cognitive appraisal model, are not reciprocally exclusive. They believe that after an injury takes place, athletes feel a loss and different emotions may emerge. Thus, an integrated stress model of psychological response, integrating grief as an emotion was suggested (Walker *et al.*, 2007) ^[47]. Pre- and post-injury factors are seen to determine how the individuals react (Arvinen - Barrow *et al.*, 2013) ^[7], these could be personal factors such as self-motivation or situational issues such as belief in the treatment.

Psychological Techniques

Making sure there is good communication between the athlete and healthcare providers is essential in promoting athlete-oriented interdisciplinary care and in improving adherence to rehabilitation (Christakou & Lavallee, 2009; Covassin *et al.*, 2015) ^[14, 15]. Athletes need to be provided with knowledge of the injury, understanding of the situation, and how one can decrease anxiety, and control emotions (Borg *et al.*, 2021) ^[9].

Goal setting is an effective tool often used by professionals due to its positive correlation with athletes' compliance; adherence to rehabilitation and motivation (Covassin *et al.*, 2015) ^[16]. One should set outcome, performance, and process goals (Covassin *et al.*, 2015) ^[16] that are specific, realistic, measurable, and attainable to encourage the athlete to work harder and stick to training to overcome setbacks (Borg *et al.*, 2021) ^[9]. An athlete who has had an ACL reconstruction may set an outcome goal to RTP successfully. Increasing knee flexion every few days may be seen as a performance goal whilst consciously contracting the quadriceps to regain function post-surgery is a process goal (Walker *et al.*, 2007) ^[47]. It is important to have both short-term goals (STGs) and long-term goals (LTGs) as they act as task and emotional support, help in athletic identity loss, and facilitate adherence to rehabilitation (Berengui *et al.*, 2021) ^[8].

Positive self-talk needs to be reinforced as inappropriate self-talk may affect performance negatively; instructional self-talk is used to concentrate on the task (Covassin *et al.*, 2015)

^[16]. Once negative self-talk is replaced with more positive talk, the perception of the injury changes, and, as a result, this increases adherence to rehabilitation. Imagery, on the other hand, is a tool used as mental preparation to create a situation in the mind, helping the athlete overcome challenges, increasing confidence, and enabling resiliency (Borg *et al.*, 2021) ^[9]. There are different forms of imagery including healing imagery, which may involve imagery related to pain management; or imagery related to RTP (Covassin *et al.*, 2015) ^[16].

Relaxation techniques may also be found to be useful (Gledhill *et al.*, 2021) ^[21]. These help in the healing process, to gain control, and rehabilitate successfully (Borg *et al.*, 2021) ^[9]. Motivation may be aided by the physiotherapist coming up with situations that ensure the achievement of goals; providing positive feedback when the effort is made; using verbal or nonverbal feedback; reinforcing appropriate goal setting and including the athlete in decision-making (Covassin *et al.*, 2015) ^[16].

Post-ACL reconstruction, athletes reported reduced fear of re-injury, were more ready for RTP, and had a positive outlook of knee function, all possibly the result of the right interventions being employed during the rehabilitation period (Arden *et al.*, 2015) ^[3]. Gledhill *et al.* (2018) ^[22] also suggested that psychological interventions, especially ones which help to reduce stress, may be effective in decreasing injury time loss and the amount of sports injuries experienced, even when done minimally. However, more exploration of the use of psychological techniques by physiotherapists during injury rehabilitation is needed.

Method

An Interpretative Phenomenological Analysis (IPA) approach was used to gather data. Such an approach aims to provide an in-depth evaluation of lived experiences of individuals (Smith & Osborn, 2015) ^[43]. Qualitative research allows the researcher to attain a more thorough standardised exploration of the behaviours, perceptions, and assumptions of the participants, as well as raise awareness on a subject through open-ended questions. In this study, such interviews sought to explore the knowledge physiotherapists possess on psychological interventions post-injury.

Sample

An inclusion and exclusion criteria were used to increase validity, a standard practice when the research procedure is being designed (Patino & Ferreira, 2018) ^[36]. Physiotherapists interviewed needed to have at least three years' work experience in sport. Newly graduated physiotherapists were excluded since more experienced individuals were seen to have possibly developed psychological techniques. Purposeful sampling was employed, using one's expertise to select what was felt to be an adequate sample for the aims of the study (McCombes, 2022) ^[30]. A voluntary response sampling was opted for rather than the authors recruiting the participants themselves, however, this may still possess some form of bias as some individuals may be more likely to participate than others (McCombes, 2022) ^[30].

Data Collection and Ethical Procedures

Data gathering was initiated once the University's Research Ethics Committee granted ethical approval. A Gatekeeper Form was sent to the local association of physiotherapists. This explained the study's aims, sample, and data collection

method and asked the association to pass on information sheets and consent forms to their members. This avoided bias in the selection of participants. Those who volunteered to participate were asked to return the signed consent form to the first author. Thus, participants willingly volunteered themselves (Murairwa, 2015) ^[34]. Six physiotherapists replied to the call, this being the sample size required for the IPA method to be adequate (Ellis, 2016) ^[19].

Ideally, face-to-face interviews should be employed as communication is seen to be better as participants may open up more. However, the interviews took place online through Zoom, due to the Covid pandemic and interviewees' preferences. Each interview lasted around 40 minutes and was audio-recorded with the participant's consent. The interviews were conducted by the first author. Prior to the interviews being conducted, a pilot study was performed to enhance validity and reliability (Sridharan & Sivaramakrishnan, 2015) ^[44]. This ensured conducting interviews in a more thorough way ensuring there are no leading questions and eliminating bias.

Data Analysis

Throughout the interviews, the first author being a physiotherapist herself, did her utmost to engage in the physiotherapists' experiences (Pietkiewicz & Smith, 2014) ^[37, 43]. The transcriptions were done straight away to recall the conversation more vividly. Thematic Analysis (TA) was utilised to analyse the transcriptions (Clarke & Braun, 2017) ^[15]. After reading over the transcripts multiple times, codes were created and potential themes and sub-themes were identified, (Braun & Clarke, 2008) ^[10]. Pseudonyms were used to safeguard the participant's identity.

Reliability and Validity

Biases need to be eliminated and communication between the interviewer and interviewee needs to be clear. Reliability refers to the degree the chosen research method concludes the same results upon repetition of the study (Alshenqeeti, 2014) ^[2]. To minimise bias and invalidity, participants were not shown the questions beforehand. Thus, the interview was more natural, the responses honest, and the interviewer's perceptions on the topic were not influenced. Furthermore, the physiotherapists contacting the author themselves helped in decreasing bias.

To strengthen the study's reliability, leading questions were avoided, a pilot test was conducted and minor adjustments to the questions were made. The interviewees were given the time to clarify what they had stated. The first author discussed the various steps in the data collection process with the second author, a sports psychologist and academic.

Results and Discussion

Four male participants Jake, Luca, Sam, and Daniel, and two females, Roberta and Penny were interviewed. All interviewees had a minimum of five years of experience in the field (Jake) with Daniel having the most experience – 36 years. Jake, Roberta, Sam, and Daniel are working mostly in football whilst Penny is working in a variety of sports including Olympic-level athletes. Luca, on the other hand, is working with student-athletes in various sports. The emergent themes were: the physiotherapists' injury perception, factors that influence an injury, lack of psychological interventions, professional versus amateur, and psychological interventions employed.

The Physiotherapists' Injury Perception

Injury can be traumatic and psychological reactions may be evident, since this causes a perception of loss for the athlete. Injury is seen to be complex by Jake; for him, it is not just about the physical issues only but also the mental aspects. For Jake as well as Penny and Roberta, an injury may affect athletes' RTP and performance. Such factors show clearly the need for athletes to be psychologically prepared for each stage of the rehabilitation experience (Kraemer *et al.*, 2009) [27].

For Roberta, it all depends on how serious the injury is, whilst Sam states that it depends on how long the injury lasts; the longer it lasts, the more psychological challenges likely to be experienced similar to that stated by Haraldsdottir and Watson (2021) [23]. On the other hand, for Penny, Patients with a previous injury, like a second ACL reconstruction, are psychologically more prepared, knowing what the process entails, that there will be dips and that improvement won't be constant. They worry less, are less anxious, and push more within the limits allowed, obtaining better results.

Individuals with previous injuries have been found to have a higher confidence level as well as functional attention levels on RTP (Christakou *et al.*, 2020) [13]. Jake, however, believes, that when one experiences recurrent injuries such as a second ACL injury, these bring on long-term psychological issues such as depression. In fact, McPherson *et al.*, (2019) [31] found that when an athlete experiences a second ACL injury they are less psychologically ready and, may even attempt to RTP early or even train excessively to RTP, thus, threatening a successful recovery (Kraemer *et al.*, 2009) [27]. Daniel states that athletes need to be patient and give the body time to heal. However, athletes may be impatient due to feelings of being left out, someone taking their place on the team, and because their identity is so tied up to their sport. Sam also speaks about a patient of his who was so keen to RTP that he rushed into getting back and developed other injuries in the process.

Factors that influence an Injury

Depending on rehabilitation progress, athletes may go through different *emotional stages*. Soon after the injury takes place, the athlete may deny this to keep competing, stated Roberta. Penny feels that the way they respond both verbally and nonverbally is a clear indication of their anger at the situation and lack of acceptance of it. This may be seen as the athlete's attempt at coping.

Roberta stated that an athlete may feel insecure not knowing how long the injury will take to heal and how performance will be affected once rehabilitation has been completed. This insecurity, in itself, may cause the athlete to delay RTP and even participation in the sport (Hsu *et al.*, 2017) [26]. Athletes may also experience injuries due to *external factors*, such as pressure from the club and the need to handle the pain experienced and look tough (Borg *et al.*, 2021) [9]. When such pressures are evident, the athlete may be affected psychologically, creating a further risk of injury, stated Roberta. Teammates and coaches may also be pushing the individual to RTP early (Penny). Such pressure to RTP early reduces the athletes' perception of autonomy, (Menta & D'Angelo, 2016) [33].

The greater the psychological reactions and loss of identity an athlete experiences when injured the harder it is to cope with the situation. For one of Jake's patients, upon returning, he struggled to find his identity. This is a big thing, when one

loses his place, someone else is coming, and you're getting older. The athlete's career is very short, so there are many negative psychological elements.

Sam stated that as a result, the athlete would need to train harder to regain their place in the team once again. Both Jake and Sam believe that athletes are often motivated to RTP due to the fear of being replaced (Podlog & Eklund, 2007) [38].

Lack of Psychological Interventions

Similar to that reported by Driver *et al.* (2019) [18], all interviewees stated not utilising psychological interventions much due to *limited knowledge and resources*. According to Roberta, physiotherapists lack the *expertise*, even after having studied at Master's level, as also expressed by Arvinen-Barrow *et al.* (2007) [1]. Sam expressed a *lack of confidence* and *fear* of utilising interventions he is not aptly trained in, while Jake feared taking the risk and possibly making a situation worse. Having a specific module in sports psychology specifically at a post-graduate level is suggested (Arvinen-Barrow *et al.*, 2007) [7]. Also, clarifying one's role and when referral for further counselling is needed may be important (Borg *et al.*, 2021) [9]. *Overlooking* and *underestimating* the *subject's importance*, were points mentioned. Sam suggested the prioritising of other areas whilst Daniel believes that even though physiotherapists know it is important, they tend to underestimate how much it can aid the athlete.

Professional versus Amateur

Roberta, Sam, and Penny stated that *professional* athletes who earn their living simply from sport are more likely to experience psychological reactions after an injury. Penny commented that injury is not homogeneous for everybody. If I play my five-a-side with friends after a few beers, it's one thing. If my job is on the line, it's another. These are significant conditions that we need to be aware of as therapists.

It all depends on where the *athlete's career* is going. Injury may lead to retirement when one loses the motivation to soldier on and gives up on the rehabilitation process. However, Niven (2007) [35] believes that elite athletes often have high motivation for RTP, in contrast with *recreational athletes* who tend to have low motivation to *adhere to rehabilitation* (Levy *et al.*, 2009) [28].

Psychological Interventions Employed

Psychological interventions may help athletes with the rehabilitation process and with reducing psychological trauma (Heaney *et al.*, 2015) [25]. The most used interventions are; positive self-talk; setting goals; coping communication skills; relaxation and visualization techniques (Borg *et al.*, 2021) [9]. Imagery was the only technique not mentioned by any of the interviewees, with all other interventions discussed by all participants. Daniel believes that such techniques tend to be implemented by physiotherapists, at times knowingly, at other times unknowingly.

For Sam, Penny, and Luca *communication* with the patient and educating them about injury aspects is essential. Penny believes that one needs to make the patient aware that some of the issues experienced are normal and acceptable as this will help the athlete psychologically. Luca believes that one needs to get the athlete on the same wavelength by explaining the injury process to them so that rehabilitation can progress. Penny suggests giving the patient materials to reinforce certain aspects.

Roberta, Sam, and Daniel all utilise positive self-talk in their work with Roberta believing it helps the athlete's self-confidence. When a player shows a lack of belief and needs a push, positive self-talk may be very useful. This technique may be seen as a coping skill and helps the athlete to persist and achieve success; it is also considered one of the best psychological interventions one can employ (Arvinen-Barrow & Walker, 2013, Borg *et al.*, 2021) ^[7,9]. Such coping skills in the early phases of rehabilitation allow athletes to focus better on the rehabilitation's active components (Carson & Polman, 2008) ^[12]. For Sam, those who experience a long-term injury in comparison to a short-term one need better coping skills during the rehabilitation process.

Penny employed a different approach through taping, "even if non-functional, sometimes the placebo effect is useful to have. The mental aspect of these for me is part of the coping strategy." Although the effectiveness of taping is unclear, Sawkins (2005) ^[42] believes that it may affect athletes' confidence. Jake, on the other hand, utilises GPS statistics as an intervention in the later stages of rehabilitation to aid athletes to regain confidence.

You show the athlete his pre-injury kilometres and high-speed running, telling him, "Look during last week's game you were very similar, you were performing well on the pitch" ... Some need those numbers, while others will just need some time, numbers won't help. So, that's the type of 'psychological intervention' that I would use.

Jake would "objectify" psychological interventions in this way whilst Sam made use of objective questionnaires.

Another coping skill utilised is goal-setting, a skill that aids in injury acceptance, understanding rehabilitation, and successful adherence (Reese *et al.*, 2012) ^[40]. Once one accomplishes a goal, psychological distress decreases, and confidence increases (Brinkman *et al.*, 2019) ^[11]. For Daniel, once a goal is set, that is half the road to healing, athletes believe in you and know that whatever happens, you can readjust. With no goal standard, they feel that you are taking them for a ride, they don't know where they are going, and it's taking too long.

Goals should be performance focused not outcome-focused, allowing evidence of progress and helping to enhance adherence when faced with a setback (Berengui *et al.*, 2021) ^[8]. Roberta stated that at times, athletes and physiotherapists do not share the same goal, thus, an agreement needs to be reached. This helps the athlete to feel they have some autonomy in the process and, thus, this helps psychologically. Penny agrees with this as at times an athlete does not have the time to spend hours on their rehabilitation despite the need for it. Reaching such an agreement ensures that the goals set are realistic and attainable. This helps to act as intrinsic motivation Sam stated; if goals are not reached, athletes may feel like a failure and develop a negative mindset.

For Sam, Penny, and Luca STGs are the milestones that keep athletes motivated, whereas LTGs at times demotivate athletes. Performance goals, on the other hand, help in managing stress, keeping track of one's progress, and increasing adherence to rehabilitation. This shows a preference for STGs over LTGs (Borg *et al.* 2021) ^[9]. Jake and Penny, however, believe, that athletes need to have an end-point to look forward to.

Four physiotherapists opt to use *breathing* and *relaxation techniques*, especially in the early stages to gain trust, when there is fear or pain (Luca). Such techniques are useful in handling the athletes' stress (Arvinen-Barrow & Walker,

2013) ^[7]; pain tolerance (Christakou & Lavalley, 2009) ^[14]; improving concentration, and increasing self-control and confidence (Walker *et al.*, 2007) ^[47].

Daniel, on the other hand, introduced a "photo-biofeedback system", which helps the individual coordinate breathing and heart rate (HR). This can then be utilised also in sports and daily life. Self-awareness and mindfulness may also be useful skills Penny asserted, however, that having a psychologist on board would be beneficial since physiotherapists do not feel competent enough in these skills.

Heaney's (2006) ^[24] study found that fifty-one percent of physiotherapists did not refer athletes to a sports psychologist. In this study, Daniel was the only one who did not, saying that he is not against this practice. Possibly when he graduated, 36 years ago, there were no sports psychologists around, and with experience developed over years of practice, he learned to handle psychological issues alone.

When Sam, feels that what he is experiencing in his work is not in his remit, he *liaises with a sports psychologist*. However, Penny although suggesting psychology to aid the client, leaves it up to them to follow this through. There may be a *barrier* and *stigma* associated with being referred to a sports psychologist (Arvinen-Barrow *et al.*, 2014) ^[5]. Sam found that most patients did not follow it up with Jake complimenting this by stating that athletes showed uneasiness at the thought.

Education on the sports psychologist's role, alongside broadening the referral network, must be implemented. Additionally, physiotherapists often try to manage the public's expectations regarding their role, often being confused about when one should refer (Heaney, 2006) ^[24]. Daniel believes that locally, professionals, think they can handle everything themselves. A lack of resources may also be related to why individuals do not see a sports psychologist (Heaney, 2006) ^[24].

Sam and Daniel try and incorporate appropriate psychological interventions; Daniel expressed that comparing physiotherapists who employ interventions and those who do not is "not ideal and is unethical", whilst for Sam, I don't think enough participants have undergone psychological interventions for me to provide an accurate answer. Nonetheless, I use it whenever possible in different means. I cannot compare both means, perhaps because it is not objective enough.

For, Penny professional psychological help is not readily available enough to be able to compare. However, she also added that a mindset shift from that of 'denial and being upset' to a more accepting one, often follows, with decreased anxiety levels and decreased fear of RTP... now whether because of the intervention or because of an innate growth mindset, that's essentially a determining factor in the rehabilitation.

Following the psychological intervention, it has been seen that re-injury risk decreases (Gledhill *et al.*, 2021) ^[21], athletes feel safer and their mental health improves (Zakrajsek & Blanton, 2017) ^[49]. For Roberta, having a supportive environment reduces stressors and their magnitude (Ivarsson *et al.*, 2017) whilst learning to engage in psychological interventions, helps in "organising ideas" (Daniel). Luca feels that the athlete can communicate feelings much better, this helps to manage thoughts (Borg *et al.*, 2021) ^[9] and in progressing in the rehabilitation process.

For Penny, the interventions help the athlete feel more confident and RTP. She demonstrated great trust in the sports psychology profession.

I first spoke to the sports psychologist, who knew the athlete for the past months and told me what to look out for.... such small cues over time greatly helped. I believe that psychologists' usefulness is there, they're trained to do so... I have faith in that profession, that they know what they are doing, and it helps.

Such a holistic approach was emphasized by Daniel, who stated that one needs to acknowledge that the athlete's stress will affect performance and healing and, thus, needs to be handled to enhance rehabilitation. Luca, too, believes in having an interdisciplinary team working for the athlete's well-being (Arvinen-Barrow & Walker, 2013)^[7], this being done in more professional sports set-ups. For Roberta, athletes often RTP more confidently after engaging in psychological intervention as also expressed by Borg *et al.* (2021)^[9], even if one simply understands their fear and attempts to give them some direction.

Conclusion

This study explored the knowledge physiotherapists possess regarding sports psychological interventions to aid rehabilitation. Findings indicate the need for psychological interventions to be focused on two levels: at an educational level and during the athletes' rehabilitation post-injury.

Fear of the unknown; the loss of athletic identity; a decrease in self-confidence and other psychological responses were seen as issues that often hinder RTP and performance. Psychological reactions tended to vary depending on the severity of the injury; rehabilitation; whether the athlete was at a professional or amateur sports level and reoccurrence of an injury.

Physiotherapists acknowledged the importance of psychological interventions however, did not engage much in such interventions due to a lack of resources and education on this aspect. As a result, the physiotherapists interviewed reported a lack of confidence when utilising such techniques. Engaging in such techniques is also often overlooked due to time concerns.

Despite such barriers, some psychological interventions were utilised these being: education on the injury and communication skills; setting of goals; coping skills; positive self-talk; relaxation skills, and use of objective questionnaires. Most interviewees did liaise with or refer to a sports psychologist when they felt this was needed. However, the stigma associated with such referral was mentioned repeatedly as also evidenced by Arvinen-Barrow *et al.*, (2014)^[6], with many athletes denying the need for psychological support (Gledhill *et al.*, 2021)^[21]. Also, participants suggested a lack of access to a sports psychologist and physiotherapists' thoughts on wanting to manage all injury issues themselves.

Two physiotherapists believe that one cannot compare the difference seen when psychological interventions were utilised versus when they were not, due to this not being objective enough, ideal, and ethical to do so. The other four stated that following psychological interventions or sports psychologists' input athletes were able to vocalize their feelings more; have greater trust in other professionals, and showed increased awareness and self-confidence. A holistic multidisciplinary approach was seen by all as needed,

keeping in mind, the athlete as a human being with emotions rather than simply addressing the injury.

Implications of the Study

Future studies should allow for greater participant diversity across cultures. The role of social support provided by significant others in the athlete's life during the rehabilitation period may also be a point of interest. This study is intended to raise awareness of the importance of considering the athletes' psychological states, and the effect on their careers. The need to speak openly on psychological issues that may be experienced may help to eliminate any stigma, encouraging athletes and those who work with athletes to recognise the positive influence psychological interventions may have. The need to invest time and resources in adequate training for physiotherapists and medical staff in the area of sports psychology is imperative. The authors hope that this study acts as a means to create more awareness within clubs and sports organisations on the need for providing athletes with psychological support.

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