

**The role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes**

A minor dissertation prepared in partial fulfilment of the Master of Science in Exercise and Sports  
Physiotherapy Degree



**Student: Jamie King (KNGJAM006)**

**Supervisors: A/Prof Theresa Burgess, A/Prof Fraser Carson and Dr Candice Hendricks-De Kock**

MSc in Exercise and Sports Physiotherapy

Division of Physiotherapy

Department of Health and Rehabilitation Sciences

Faculty of Health Sciences

University of Cape Town

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Definition</b>
ACL	Anterior Cruciate Ligament
HREC	Human Research Ethics Committee
QoL	Quality of Life
RTS	Return to Sport
SA	South Africa
SARU	South African Rugby Union
SCIM	Scanlan Collaborative Interview Method
SSQ	Social Support Questionnaire
WC	Western Cape

## GLOSSARY OF TERMS

<b>Term</b>	<b>Definition</b>
Coach-athlete relationship/dyad	An intimate social relationship (Staff, Didymus & Backhouse, 2020), between a coach and athlete. In sport, the coach-athlete dyad is considered the most fundamental relationship. The coach's role is to provide leadership, guidance and support, while the athlete's role is to perform, learn and receive support. The coach-athlete relationship is described as the situation whereby thoughts, feelings and actions of coaches and athletes are mutually unified (Vigário, Teixeira & Mendes, 2020). Hence, both role-players use this relationship to achieve common goals of success and satisfaction through performance development (Jowett, 2017).
Emotional support	A type of social support reflected by the provider (coach) demonstrating acts of empathy, reassurance and comfort (Hardy, Burke & Crace, 1999).
Informational support	A type of social support reflected by the provider (coach) offering guidance, advice and motivation (Hardy, Burke & Crace, 1999).
Private (independent) school	A privately governed school that is not regulated by the state (Independent Schools Association of Southern Africa, 2022).

Public school quintiles 1-5	To address inequity in South Africa's education system, according to the National Norms and Standards for School Funding policy, provincial education departments are required to rank schools into one of five quintiles, which represents a poverty score based on unemployment and literacy rates in the community which the school serves. Quintile 1-3 schools are situated in underprivileged areas where scholars do not pay any fees as the government funds these schools. While quintile 4 and 5 schools are situated in affluent communities, they receive little to no state funding (White & Van Dyk, 2019). Despite higher quintile schools receiving less government funding, their affluent school governing bodies raise more funds for better resources compared to lower quintile schools (Stott, 2013).
Rehabilitation	A process consisting of targeted interventions which aim to restore optimal form (anatomy) and function (physiology) after injury to enhance recovery, performance capacity and overall wellbeing (Frontera, 2003). In contrast to conventional injury rehabilitation, sports injury rehabilitation necessitates additional support and an extensively constructed sports-specific programme that prepares athletes and their damaged tissue to endure the high physical and psychological demands of sport (Dhillon, Dhillon & Dhillon, 2017).
Return to Sport (RTS)	A continuum consisting of the graded progression from return to participation (athlete is involved in training and rehabilitation), return to sport (athlete has resumed sporting activity), and return to performance (athlete has returned to pre-injury level of performance) with the aim of re-integrating the athlete into their sporting environment (Ardern et al., 2016).
Severe knee injury	Any injury to the knee joint, resulting in absence from full training and matches for longer than 28 days (Gouttebauge, Aoki & Kerkhoffs, 2018).

- Social support Social support broadly represents the purpose and worthiness of relationships (Schwarzer & Knoll, 2007). It is described as the provision and transfer of resources within a relationship, from a provider to a recipient, with the intention of improving the recipients' wellbeing (Schwarzer, Knoll & Rieckmann, 2004; Shumaker & Brownell, 1984). In the scope of coach-athlete relationships, the provider is the coach, and the recipient is the athlete.
- Tangible support A type of social support reflected by the provider (coach) offering personal and/or material assistance (Hardy, Burke & Crace, 1999).

## ABSTRACT

Severe knee injury requires prolonged rehabilitation and absence from sport. Coaches are vital during rehabilitation, supporting athletes with psychological challenges associated with injury recovery. While athletes appreciate coaches' involvement during rehabilitation, their satisfaction with the support delivered is varied. The coach-athlete dyad is the most instrumental relationship in sport, whereby thoughts, feelings and actions are unified to achieve success and satisfaction. Although coach-athlete relationships have been explored, research on coach-athlete relationships during rehabilitation is scarce. Furthermore, influences amongst amateur coaches and adolescent athletes are unclear.

To explore the coach's role during an athlete's rehabilitation from injury, a scoping review was conducted using EBSCOhost, PubMed and Scopus databases. A total of 2716 studies were excluded based on eligibility criteria during title, abstract and full-text screening. Twenty-seven articles were included for review. Factors that may influence the coach's role during rehabilitation included: athlete's and coaches' age and gender, type of sport and level of competition, the athletes' role in the team, and injury severity and type. The coach's major role during rehabilitation was providing social support to injured athletes. The amount and availability of social support, as well as differing forms and their perceived prominence to athletes' wellbeing, are key features to consider. Social support provided by coaches to athletes undergoing rehabilitation aided in maintaining coach-athlete relationships, and in preventing conflict between the two upon return to sport.

We then conducted a qualitative study to explore the role of the coach-athlete relationship to determine its influences on rehabilitation following severe knee injury. The objectives were to explore the psychological influences of severe knee injury on rehabilitation in adolescent athletes and their coaches; to explore coaches' and athletes' perspectives and understanding of their respective roles during rehabilitation; and to describe factors that influence coach-athlete relationships during rehabilitation following severe knee injury. Nine coach-athlete relationships were recruited via email from well-resourced schools in South Africa. Semi-structured interviews were conducted in-person and recorded via Zoom. Nvivo 12 was utilised to organise, store and analyse the data. An inductive approach to reflexive thematic analysis was employed.

The type, timing, amount and quality of social support provided by coaches influenced coach-athlete relationships during rehabilitation. Athletes expressed a lack of coach support, while coaches were unsure of how much support to offer. Novice coaches and athletes had insufficient knowledge regarding injury rehabilitation and preserving coach-athlete relationships.

Failure to maintain social inclusion in the team and absence of a person-centered approach affected coach-athlete relationship quality. Athletes' reliance on coach-athlete relationships during rehabilitation was impacted by their supportive families and physiotherapists. Ensuring regular communication was vital to uphold coach-athlete relationships during rehabilitation. Yet, coaches prioritised the team and were uncertain of their commitment to injured athletes owing to lengthy injury timelines. Coach-athlete relationships were also affected by school's policies to safeguard adult-minor interactions. Part-time coaches had additional commitments which took preference above preserving coach-athlete relationships throughout rehabilitation.

The coach-athlete relationship was used to facilitate athlete's psychological coping linked with severe knee injury and rehabilitation. Coaches provided injured athletes with social support, yet athletes' contentment with their coaches' contributions during rehabilitation was mixed. The coach-athlete relationship may influence rehabilitation by improving experiences with injury recovery, enhancing wellbeing, and facilitating a smooth transition into return to sport. We recommend upskilling coaches and implementing a 'team approach' during rehabilitation to enhance coach-athlete relationships. Future research should consider diverse samples; follow-up interviews; validating instruments within rehabilitation contexts; and the impact of gender, socioeconomic status, resource access, and ethical dilemmas.

# CHAPTER 1: INTRODUCTION AND SCOPE OF THE DISSERTATION

## 1.1 Introduction

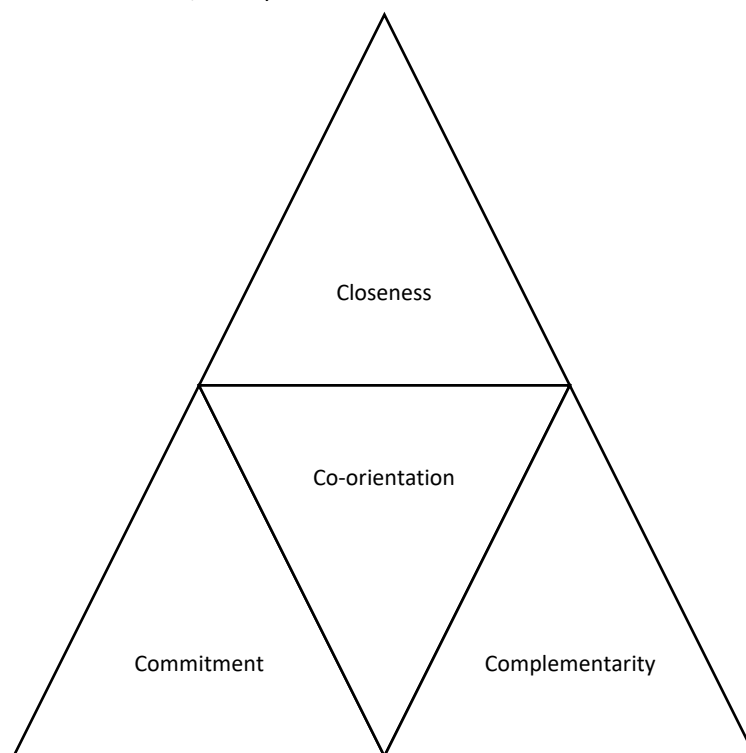
Severe sports injuries requiring rehabilitation and subsequent absence from training and competition are common amongst athletes (Fuller et al., 2007). Severe knee injury is defined as any injury to the knee joint, resulting in absence from full training and matches for longer than 28 days (Gouttebauge, Aoki & Kerkhoffs, 2018). Severe knee injury, is particularly common in collision sports (Hammer et al., 2020) with multi-directional components such as rugby union, basketball and netball (Moses, Orchard & Orchard, 2012). Surgery is considered key medical management for various types of severe knee injury, such as Anterior Cruciate Ligament (ACL) ruptures (Ardern et al., 2011) and certain meniscal tears (Borque et al., 2021) as athletes attempt to successfully return to sport (RTS) (Ardern et al., 2016). To safely and efficiently RTS, athletes undergo rehabilitation (Christakou & Lavallee, 2009). The usual duration of post-operative rehabilitation following severe knee injury is between six and 12 months for ACL reconstruction (Ardern et al., 2011) and from four to six months following meniscal tears (Borque et al., 2021).

Sports injury encompasses a biopsychosocial model, incorporating a myriad of contributing factors regarding rehabilitation outcomes (Wadey et al., 2018). In addition to physical trauma posed by severe injury, psychological setbacks may be provoked, further challenging recovery and rehabilitation (Podlog et al., 2013). The way athletes cope with severe injuries may have significant consequences on their RTS, performance and quality of life (QoL) (Carson & Polman, 2010). Thus, there has been a recent increase in research regarding the psychological impact of severe knee injury, such as an ACL injury, on holistic rehabilitation outcomes (Carson & Polman, 2012). The majority of research in this area has recognised important principles in facilitating coping and positive stress reactions during an athlete's rehabilitation (Carson & Polman, 2008).

Research pertaining to the web of interpersonal relationships in sport and their impact on psychological wellness and performance has become increasingly popular (Staff, Didymus & Backhouse, 2020). A growing focus of research towards understanding coaches' roles and their impact on athletes has been attributed to on-going investigations concerning coach-athlete relationships (Blom, Watson II & Spadaro, 2011). In sport, the coach-athlete dyad is considered the most fundamental relationship. The coach's role is to provide leadership, guidance and support; and athletes play their part by performing, learning and receiving support (Vigário, Teixeira & Mendes, 2020).

The coach-athlete relationship is described as the situation whereby thoughts, feelings and actions of coaches and athletes are mutually unified (Vigário, Teixeira & Mendes, 2020). Hence, both role-players use this relationship to achieve common goals of success and satisfaction through performance development (Jowett, 2017). Positive coach-athlete relationships endorse participation and increases athlete's self-confidence (Blom, Watson II & Spadaro, 2011; Foulds et al., 2019). The quality of the dyad is important as it serves as a vehicle to provide coaches and athletes with motivation, assurance, comfort and support to augment their sporting experiences and well-being (Jowett, 2017; Vigário, Teixeira & Mendes, 2020).

Coach-athlete relationships have been expressed according to three constructs, better known as the '3+1Cs model' (Figure 1). 'Closeness' encompasses feeling emotionally close to each other, symbolised by communal appreciation, trust and respect; 'Commitment' expresses dedication to uphold an enduring relationship through cognitive relations; 'Complementarity' reflects mutual exchanges reflecting behavioural features such as responsiveness, kindness and eagerness; and 'Co-orientation' describes the extent of similarity between coaches' and athletes' perceptions concerning the quality of the relationship (Jowett, 2007). When these paradigms are enhanced, both coaches' and athletes' satisfaction, performance and social support are positively influenced, yielding strong coach-athlete relationships (Jowett & Ntoumanis, 2004).



*Figure 1: '3+1Cs model' of coach-athlete relationships*

Note: Adapted from *Interdependence analysis and the 3+1Cs in the coach-athlete relationship*, by S. Jowett, 2007, *Human Kinetics*, 15-27.

Coach-athlete relationships have been vastly explored, particularly amongst professional athletes and coaches, from high income countries, with the ultimate goal of improving sporting performance (Vigário, Teixeira & Mendes, 2020; Wadey et al., 2018). Coaches occupy a pivotal position within the sports setting of athletes, yet their influences are not only isolated to sporting environments with potential overflow of effects into different facets of athlete's lives (Blom, Watson II & Spadaro, 2011). However, the potential influence of the coach-athlete relationship on rehabilitation after severe injury has not yet been explicitly explored. There is a paucity of literature regarding the psychology of injury in adolescents (Podlog et al., 2013), and little mention concerning coach-athlete dyads amongst adolescent athletes as well as non-elite high school coaches in low income countries. Moreover, the psychological impact associated with different severe knee injury types, such as meniscal tears and collateral ligament damage, has been less frequently explored.

The rationale and purpose for understanding coach-athlete relationships reflects in its practical application, granting coaches an opportunity to enhance interpersonal interactions (Foulds et al., 2019; Jowett, 2017). Improving communication within this dyad may enable coaches and athletes to reach mutual agreement more often thereby facilitating a better relationship (Wadey et al., 2018). Understanding coaches' and athletes' perceptions of their respective roles during rehabilitation, and whether they align or diverge, may provide valuable insight into potential reasons for successful or ineffective coach-athlete relationships as well as RTS outcomes following injury rehabilitation. Knowledge on this topic could be useful for existing and future coaches to further inform themselves, in striving to improve their understanding of injured adolescent athletes' experiences with rehabilitation. In recognising the importance of the coach-athlete relationship, particularly during rehabilitation following severe injury, RTS may be improved through increasing athletes' confidence and alleviating potential anxiety. Additionally, sporting performance could be enhanced promoting sport development in South Africa (SA), risk of re-injury could be reduced, and health and well-being might better be restored, as adolescent athletes undergo a more pleasant recovery process. Ultimately, the burden of injury and disease may be minimised, promoting inclusion in SA sport and enhancing athletes' QoL.

## **1.2 Aims and objectives**

The dissertation comprises a scoping review (Chapter 2) and a qualitative study (Chapter 3).

### **1.2.1 Scoping review aim and objectives**

The aim of the scoping review was to explore current literature on the coach's role during an athlete's rehabilitation following sports injury.

The scoping review objectives were to:

- 1) Identify factors that may influence the coach's role during an athlete's rehabilitation following sports injury.
- 2) Describe key features of the coach's role during an athlete's rehabilitation following sports injury.
- 3) Identify gaps in the literature relating to the coach's role during an athlete's rehabilitation following sports injury.

### **1.2.2 Qualitative research aim and objectives**

The aim of the qualitative study was to explore the role of the coach-athlete relationship to determine its influences on rehabilitation following severe knee injury.

The objectives of the qualitative study were to:

- 1) Explore the psychological influences of severe knee injury on rehabilitation in adolescent athletes and their coaches.
- 2) Explore coaches' and athletes' perspectives and understanding of their respective roles during rehabilitation.
- 3) Describe factors that influence coach-athlete relationships during rehabilitation following severe knee injury.

## **1.3 Plan of development**

To further explore this matter, a scoping review on the coach's role during an athlete's rehabilitation following sports injury will be presented (Chapter 2). This determines the foundation for qualitative inquiry into the role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes (Chapter 3). Finally, a summary of the study's findings and conclusion will be presented (Chapter 4).

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

Cognitive thoughts, emotional responses, and behavioural reactions to injury have a profound impact on an athlete's rehabilitation (Podlog, Heil & Schulte, 2014). Furthermore, coaches are also psychologically affected by an injury to one of their athletes (Wadey et al., 2018). Elite-level coaches report that severe injury, as well as rehabilitation, are major stressors for them to deal with (Wadey et al., 2018). Coaches may feel frustrated or angry that their injured player is unavailable for selection which may negatively impact the team's performance (Thelwell et al., 2008) and the injured athlete's morale (Thelwell et al., 2017). In devoting time and effort towards athletes undergoing injury rehabilitation, by attending to their worries and sympathising with their circumstances, coaches can establish positive coach-athlete relationships, promoting smooth transitions to RTS (Podlog & Eklund, 2007; Robbins & Rosenfeld, 2001). Hence, a deeper understanding into the psychological influence of injury on rehabilitation amongst athletes and coaches is crucial to identify ways in which athletes and coaches can confront these challenges both individually and as a pair in a strong coach-athlete relationship where possible.

In contemporary sports injury management, athletes, medical practitioners, and coaches, work as a team to achieve successful rehabilitation (Dhillon, Dhillon & Dhillon, 2017). Coaches' indirect contributions to rehabilitation can be barriers or facilitators to the athlete's overall experience of rehabilitation (Arvinen-Barrow & Clement, 2015). Coaches' interactions with injured athletes may be vital in aiding athletes to deal with the psychological issues associated with injury rehabilitation and RTS (Podlog & Dionigi, 2010). Higher levels of athlete satisfaction are linked with actions of supportive nature, guidance and positive feedback from coaches (Blom, Watson II, Spadaro, 2011). Elite-level coaches strive to tackle psychosocial challenges associated with injury rehabilitation and RTS by addressing athletes' autonomy, competence, and relatedness needs. These coaches have reported to foster a team approach to rehabilitation, facilitate effective communication amongst the rehabilitation team, provide social support, encourage positive thinking, promote goal setting, and suggest role models in their efforts to assist injured athletes with rehabilitation and RTS (Podlog & Dionigi, 2010). From the coach's viewpoint, one-on-one training sessions, making sure athletes stay engaged in their sport and team environment, and offering informational, emotional and tangible forms of social support, are effective ways of facilitating rehabilitation and RTS (Podlog & Eklund, 2007).

Some coaches, however, propose that their main role is to prepare the athlete for the physical demands of RTS, while only a few attempt to address the athletes' psychological issues during injury rehabilitation (Podlog & Eklund, 2007).

Setting achievable objectives, restoring confidence, overcoming re-injury concerns, and affording encouragement and reassurance in one's abilities, is what athletes value from their coaches during rehabilitation and RTS (Podlog & Dionigi, 2010). Some coaches understand the psychosocial impact that injury has on athletes and acknowledge that they are ideally positioned to provide necessary support (Podlog & Eklund, 2007). However, their ability to deliver appropriate and effective forms of support is unclear (Podlog & Dionigi, 2010).

Although athletes value input from their coaches during their injury rehabilitation, their satisfaction with the support provided is varied (Podlog & Dionigi, 2010). This may be due to elite coaches being able to acknowledge the psychological manifestations of injury rehabilitation experienced by athletes, but potentially lacking the expertise and confidence to impact them through their influences, particularly amongst non-elite coaches. Therefore, the purpose of this literature review was to investigate what is known regarding the coach's role during an athlete's rehabilitation following sports injury, and how this relates to athlete psychological wellbeing, performance and RTS. The scoping review aim and objectives have been stated in Section 1.2.1 (page 4).

### 2.1.1 Literature review design

Scoping reviews serve as a systematic method of evidence synthesis, by identifying and mapping the range of existing knowledge on a certain issue, concept, or topic, across or within specific contexts (Munn et al., 2022). This scoping review aims to map central themes emerging from a broad research topic, by commenting on the key sources and types of available evidence whilst identifying gaps in existing research, specifically in areas which have not yet undergone comprehensive review (Tricco et al., 2016).

## 2.2 Methodology

### 2.2.1 Search strategy

A preliminary search of three electronic databases, EBSCOhost (n=214), PubMed (n=764), and Scopus (n=1765), following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) guidelines was conducted in July 2022. An updated search was performed in August 2023 to ensure that no new literature had been published.

The search strategy included the key terms: coach OR coaches, sport injury OR rehabilitation OR injured athlete, and social OR psychological OR psychosocial AND support. See Appendix 2 for a detailed description of the search strategy.

### 2.2.2 Eligibility criteria

Empirical studies related to musculoskeletal injury of any variety, severity and duration were included, if the athlete required rehabilitation. Concussion and other neurological injuries such as spinal cord injuries were excluded. Both quantitative and qualitative studies were considered, including all forms of peer-reviewed articles such as case studies, randomised-control trials, experimental, cohort and cross-sectional studies. In addition, gray literature, such as theses/dissertations were considered. Systematic reviews, meta-analyses and literature reviews were excluded. Articles published before 1 January 1997 were excluded, in attempting to provide current, up-to-date evidence on the matter. Articles were only considered if full texts were available and in English.

### 2.2.3 Data extraction

All articles (2743) were imported to Rayyan (<http://rayyan.qcri.org>), a reference organiser, to assist with duplicate removal and article screening. This program allowed reviewers to screen the articles independently, achieving reliability. Data were extracted by the primary researcher and validated by another independent reviewer (separate to this research but knowledgeable of the subject matter), according to the eligibility criteria. Any discrepancies between the two reviewers were debated, and when no consensus could be obtained, a third reviewer (a member of the research team), was consulted for agreement. This initial title screening led to the exclusion of 2257 articles, with 150 articles remaining for additional screening. Articles were excluded due to no mention of sport/athlete injury, rehabilitation, recovery from injury and return to sport/competition; or not mentioning any social interaction between athletes and coaches. Following abstract screening, a further 96 articles were excluded, leaving 54 articles for final screening. Articles were excluded due to coaches being athletic trainers or strength and conditioning coaches and not sports coaches; or there was no mention of coaches' influence on sport/athlete injury, rehabilitation, recovery from injury and return to sport/competition; or only mentioning the influence of medical practitioners on sport/athlete injury, rehabilitation, recovery from injury and return to sport/competition; or injuries being non-musculoskeletal in nature; or initial injury prevention was the main focus. Lastly, the full texts of the remaining 54 articles were screened independently, excluding 27 articles.

Full text exclusion was based on lack of focus on coaches' roles/influences on injured athletes experience of sport/athlete injury, rehabilitation, psychological recovery from injury and return to sport/competition, were previously conducted systematic reviews, meta-analyses or literature reviews, or full texts were unavailable or not published in English. Twenty-seven articles were included in the scoping review. A full flow diagram is presented in Figure 2.

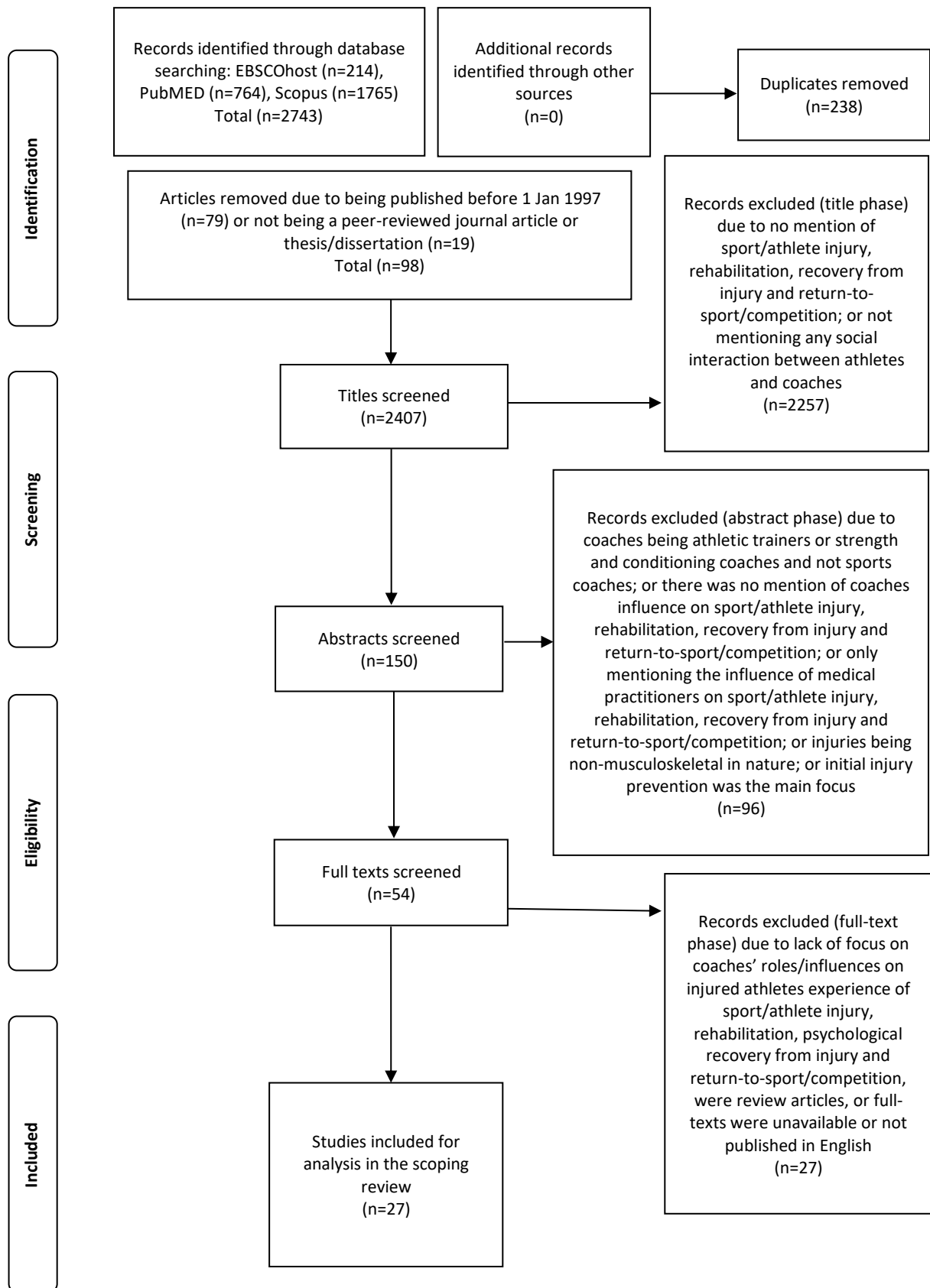


Figure 2: Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) flow-diagram

## 2.3 Results

A total of 27 studies were included for analysis in this scoping review.

### 2.3.1 Study details

Four studies (Corbillon, Crossman & Jamieson, 2008; Malinauskas, 2008; Podlog & Eklund, 2007; Robbins & Rosenfeld 2001) were published between 2000-2009, with the majority being published between 2010-2019 (17 studies). Six studies were published between 2020-present (Bon & Doupona, 2021; Borg, Falzon & Muscat, 2021; D'Astous et al., 2020; Kunnen et al., 2021; Maurice et al., 2021; Sullivan et al., 2022). All studies were conducted in high to middle income countries, with the majority (13 studies) based in North America (United States of America and Canada), followed by Europe (nine studies), Oceania (Australia and New Zealand: six studies) and Asia (two studies). There were no studies conducted in Africa, or amongst any low-income countries.

### 2.3.2 Study and participants' characteristics

There were more qualitative (16 studies) compared to quantitative (10 studies) studies, and one combined (qualitative and quantitative) study (Bon & Doupona, 2021). Eight studies (Bon & Doupona, 2021; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; Malinauskas, 2008; Newman & Weiss, 2018; Robbins & Rosenfeld, 2001; Sullivan et al., 2022; Yang et al., 2010) used the Social Support Questionnaire (SSQ), or a modified version, to measure social support, using a 6-point Likert scale, while the other two quantitative studies (Chan, Hagger & Spray, 2011; Podlog, Lochbaum & Stevens, 2010) used other self-reported questionnaires. Amongst qualitative studies, semi-structured interviews were used by all but three studies which utilised a phenomenological interview structure (Grindstaff, Wrisberg & Ross, 2010), online open-ended surveys (Kunnen et al., 2021), or the Scanlan Collaborative Interview Method (SCIM) (Iñigo, Podlog & Hall, 2015) to achieve their aims and objectives.

From the 21 studies that included athletes as participants (Bon & Doupona, 2021; Borg, Falzon & Muscat, 2021; Carson & Polman, 2012; Chan, Hagger & Spray, 2011; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; D'Astous et al., 2020; Gilbert, Lyon & Wahl, 2015; Grindstaff, Wrisberg & Ross, 2010; Hildingsson, Fitzgerald & Alricsson, 2018; Iñigo, Podlog & Hall, 2015; Kunnen et al., 2021; Malinauskas, 2008; Newman & Weiss, 2018; Podlog et al., 2013; Podlog et al., 2015; Podlog, Lochbaum & Stevens, 2010; Robbins & Rosenfeld, 2001; Ruddock-Hudson, O'Halloran & Murphy, 2014; Sullivan et al., 2022; Yang et al., 2010), a total of 1906 athletes were recorded,

of which 1111 were males and 795 were females, demonstrating a 58% gender split in favour of males. From the seven studies that included coaches as participants (Bon & Doupona, 2021; Hallquist, Fitzgerald & Alricsson, 2016; Maurice, 2019; Maurice et al., 2021; Podlog & Dionigi, 2010; Podlog & Eklund, 2007; Wadey et al., 2013), a sum of 62 coaches, of which 39 were males, 17 were females and six were of unknown gender, expresses a 68% majority of male coaches (assuming three out of the six unknown genders were males). Athlete age ranged from 12-59 years old, however many of the studies focused on college students between the ages of 18-29 (Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; D'Astous et al., 2020; Gilbert, Lyon & Wahl, 2015; Iñigo, Podlog & Hall, 2015; Malinauskas, 2008; Newman & Weiss, 2018; Robbins & Rosenfeld, 2001; Sullivan et al., 2022; Yang et al., 2010). Whereas coaches ages ranged from 25-62 years old.

A total of 18 studies included athletes or coaches involved in both team and individual sports (Chan, Hagger & Spray, 2011; Corbillon, Crossman & Jamieson, 2008; D'Astous et al., 2020; Hallquist, Fitzgerald & Alricsson, 2016; Iñigo, Podlog & Hall, 2015; Malinauskas, 2008; Maurice, 2019; Maurice et al., 2021; Newman & Weiss, 2018; Podlog & Dionigi, 2010; Podlog & Eklund, 2007; Podlog et al., 2013; Podlog et al., 2015; Podlog, Lochbaum & Stevens, 2010; Robbins & Rosenfeld, 2001; Sullivan et al., 2022; Wadey et al., 2013; Yang et al., 2010), while nine studies focused on team sports only (Bon & Doupona, 2021; Borg, Falzon & Muscat, 2021; Carson & Polman, 2012; Clement & Shannon, 2011; Gilbert, Lyon & Wahl, 2015; Grindstaff, Wrisberg & Ross, 2010; Hildingsson, Fitzgerald & Alricsson, 2018; Kunnen et al., 2021; Ruddock-Hudson, O'Halloran & Murphy, 2014).

Coaching experience ranged from four months to 32 years. All 27 studies reported on level of sports participation. Three studies included clubs (D'Astous et al., 2020; Podlog et al., 2015; Wadey et al., 2013), 14 studies involved intercollegiate sports (Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; D'Astous et al., 2020; Gilbert, Lyon & Wahl, 2015; Grindstaff, Wrisberg & Ross, 2010; Iñigo, Podlog & Hall, 2015; Malinauskas, 2008; Maurice, 2019; Maurice et al., 2021; Newman & Weiss, 2018; Podlog, Lochbaum & Stevens, 2010; Robbins & Rosenfeld, 2001; Sullivan et al., 2022; Yang et al., 2010), seven studies incorporated national level (Chan, Hagger & Spray, 2011; Kunnen et al., 2021; Podlog et al., 2013; Podlog et al., 2015; Podlog, Lochbaum & Stevens, 2010; Ruddock-Hudson, O'Halloran & Murphy, 2014; Wadey et al., 2013), four studies comprised international level (Chan, Hagger & Spray, 2011; Kunnen et al., 2021; Podlog, Lochbaum & Stevens, 2010; Wadey et al., 2013), nine studies included elite/professional level (Bon & Doupona, 2021; Carson & Polman, 2012; Chan, Hagger & Spray, 2011; Iñigo, Podlog & Hall, 2015; Podlog & Dionigi, 2010; Podlog & Eklund, 2007; Podlog et al., 2013; Podlog et al., 2015; Podlog, Lochbaum & Stevens, 2010), and only one study focused on school sports (Hallquist, Fitzgerald & Alricsson, 2016).

Some studies commented on whether sport was revenue-driven (Newman & Weiss, 2018; Robbins & Rosenfeld, 2001), and the role of athletes in their sport (Carson & Polman, 2012; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; Newman & Weiss, 2018; Robbins & Rosenfeld, 2001), however, this was not consistently reported throughout all studies.

Regarding injury profile, two studies commented on the number of injuries athletes had sustained (Corbillon, Crossman & Jamieson, 2008; Yang et al., 2010), and another 11 studies mentioned the types of injury (Borg, Falzon & Muscat, 2021; Carson & Polman, 2012; Chan, Hagger & Spray, 2011; D'Astous et al., 2020; Gilbert, Lyon & Wahl, 2015; Hildingsson, Fitzgerald & Alricsson, 2018; Iñigo, Podlog & Hall, 2015; Kunnen et al., 2021; Podlog et al., 2013; Podlog et al., 2015; Ruddock-Hudson, O'Halloran & Murphy, 2014). Of the 11 studies that recorded injury types, 10 studies described the injuries in terms of location. Nine of these studies included lower limb injuries, with knee injuries commonly reported in eight studies (Carson & Polman, 2012; D'Astous et al., 2020; Hildingsson, Fitzgerald & Alricsson, 2018; Iñigo, Podlog & Hall, 2015; Kunnen et al., 2021; Podlog et al., 2013; Podlog et al., 2015; Ruddock-Hudson, O'Halloran & Murphy, 2014). Only four studies included upper limb injuries (D'Astous et al., 2020; Gilbert, Lyon & Wahl, 2015; Iñigo, Podlog & Hall, 2015; Podlog et al., 2013), while three studies included other musculoskeletal injuries to the spine (Podlog et al., 2013), skull (Ruddock-Hudson, O'Halloran & Murphy, 2014), and pelvis (Ruddock-Hudson, O'Halloran & Murphy, 2014). Injury severity was the most commonly reported measure (23/27 studies), however there were inconsistencies concerning the criteria used to describe severity of injury. See Table 1 for a detailed description of the study and participants' characteristics noted for each study in this review.

Table 1: Study and participants' characteristics

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Bon &amp; Doupona (2021)</b>	Combined: Quantitative and Qualitative (Retrospective design)	Quantitative: Social Support Questionnaire (SSQ) – modified version Qualitative: Semi-structured interviews	One head coach  57 athletes	Unknown gender 51 years old  All female 19-38 years old (Mean age: 26.3 years old)	Team sport: Handball	Years of coaching experience: 14 years  Level of competition: Professional	Not described
<b>Borg, Falzon &amp; Muscat (2021)</b>	Qualitative	Semi-structured interviews	Six athletes	Four males Two females Unknown ages	Team sport: Football	Not described	Type: Five musculoskeletal foot/leg injuries
<b>Carson &amp; Polman (2012)</b>	Qualitative	Semi-structured interviews Pre-designed diary	Five athletes	All male 18-27 years old	Team sport: Rugby	Level of competition: Professional  Role in team: Two forward players Three backline players	Type: ACL injury requiring surgery  Severity: Length of rehabilitation six to 12 months

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Chan, Hagger &amp; Spray (2011)</b>	Quantitative	Sport motivation: Behavioural Regulation in Sport Questionnaire (BRSQ) and battery of psychological measures Personality: General Causality Orientation Scale (GCOS) Autonomy support: Health Care Climate Questionnaire (HCCQ) Treatment motivation: Treatment Self-Regulation Questionnaire (TSRQ) Treatment intention: Self-developed questionnaire	206 athletes	98 males 108 females (Mean age: 24.75 years old)	Team sports: Football, basketball, volleyball  Individual sports: Athletics, swimming, canoeing, cycling, gymnastics	Level of competition: Professional; 64 regional 127 national Eight international	Type: 40 muscular injuries 60 skeletal injuries 63 ligament injuries 30 other injuries  Severity: Moderate-to-severe; minimum requirement of two weeks' time-loss from sports participation (Mean: 2.71 months) (Range: Three weeks to 25 months)
<b>Clement &amp; Shannon (2011)</b>	Quantitative (Descriptive design)	SSQ – modified version	49 athletes	27 males 22 females (Mean age: 20.1 years old)	Team sports: Football, volleyball, basketball, baseball, soccer	Level of competition: Intercollegiate; 24 NCAA Division II Collegiate 25 NCAA Division III Collegiate  Role in team: 36 starters 13 non-starters	Severity: 22 severe injuries 17 moderate injuries 10 minor injuries

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Corbillon, Crossman &amp; Jamieson (2008)</b>	Quantitative	SSQ – modified version	72 athletes	46 males 26 females 18-29 years old	Team sports: Basketball, volleyball, hockey  Individual sports: Wrestling, track & field	Level of competition: Intercollegiate  Role in team: 43 Starters 29 Non-starters	Amount: One to five injuries (41 athletes) Six to 10 injuries (16 athletes) 11-15 injuries (Four athletes) >15 injuries (11 athletes)
<b>D'Astous et al. (2020)</b>	Quantitative (Cross-sectional design)	Perceived competence: Intrinsic Motivation Inventory (IMI) Achievement goals: Achievement Goal Questionnaire for Sport (AGQ-S) Return-to-sport outcomes: Return-to-Sport After Serious Injury Questionnaire (RSSIQ)	75 athletes	45 males 30 females (Mean age: 21 years old)	Team sports: Basketball, football, hockey, lacrosse, rugby, soccer, softball, volleyball, ultimate frisbee, cheer, field hockey, baseball  Individual sports: Swimming, powerlifting, skiing, track and field, dance, cross country, wrestling, gymnastics, golf	Level of competition: 21 club Three junior college Intercollegiate; 17 NCAA Division I 18 NCAA Division II Three NCAA Division III 10 NAIA	Type: ACL, AC joint, hamstring, foot, wrist, and other  Severity: Severe; minimum requirement of three weeks' time-loss from sports participation (Mean: 20 weeks) (Range: Three to 133 weeks)
<b>Gilbert, Lyon &amp; Wahl (2015)</b>	Qualitative (Case study)	Not described	One athlete	Female 23 years old (Senior year)	Team sport: Softball	Level of competition: Intercollegiate	Type: Labral tear (Chronically unstable shoulder)

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Grindstaff, Wrisberg &amp; Ross (2010)</b>	Qualitative	Phenomenological interview	Five athletes	Two males Three females 14-22 years old	Team sports: Football, basketball, softball, rowing	Level of competition: Intercollegiate NCAA Division I Collegiate	Severity: Severe; minimum requirement of 30 days of time-loss from sports participation
<b>Hallquist, Fitzgerald &amp; Alricsson (2016)</b>	Qualitative	Semi-structured interviews	Five coaches	Unknown gender and ages	Team sports: Handball, football, gymnastics, ice hockey  Individual sport: Gymnastics	Level of competition: Scholar athletes (ages 12-16)	Severity: Minimum requirement of two months of time-loss from sports participation
<b>Hildingsson, Fitzgerald &amp; Alricsson (2018)</b>	Qualitative	Semi-structured interviews	Six athletes	All female 18-23 years old	Team sport: Football	Level of competition: Different levels of Swedish football	Type: Five ACL injuries One ankle injury  Severity: Minimum requirement of more than two weeks of rehabilitation

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Iñigo, Podlog &amp; Hall (2015)</b>	Qualitative	Scanlan Collaborative Interview Method (SCIM)	10 athletes	Eight males Two females 18-24 years old (College/university students)	Team sports: Soccer, football, basketball, cheerleading  Individual sports: Judo, badminton	Level of competition: Six intercollegiate Two professional Two elite	Type: One torn meniscus in knee Seven ACL tears (With/without damage to other associated structures) One dislocated clavicle One broken jaw  Severity: Severe; minimum requirement of one month time-loss from sports participation (Range: Three to 10 months) or severe injury requiring surgical intervention
<b>Kunnen et al. (2021)</b>	Qualitative	Online, open-ended surveys	21 athletes	12 males Nine females 19-51 years old (Mean age: 28 years old)	Team sport: Soccer	Level of competition: 18 Sunday local, community, or recreational One national Two international	Type: ACL injury requiring reconstructive surgery  Severity: Minimum time-loss from sports participation (Mean: 15 months) (Range: Six to 24 months)

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Malinauskas (2008)</b>	Quantitative (Descriptive exploratory design)	SSQ – modified version	29 athletes	17 males 12 females 18-25 years old	Team sports: Basketball, football, volleyball  Individual sports: Track and field, eastern martial arts, gymnastics	Level of competition: Intercollegiate	Severity: Nine minor injuries (< a week) 12 moderate injuries (Eight to 21 days) Eight major injuries (>21 days)
<b>Maurice (2019)</b>	Qualitative (Dissertation)	Semi-structured interviews	13 coaches	Eight males Five females 29-62 years old (Mean age: 45 years old)	Team sports: Basketball, baseball, football, ice hockey, rowing, soccer, volleyball  Individual sports: Golf, tennis, swimming, diving, gymnastics	Years of coaching experience: One to 31 years  Level of competition: Intercollegiate NCAA Division I Collegiate	Severity: Minimum requirement of four to seven days of time-loss from sports participation
<b>Maurice et al. (2021)</b>	Qualitative	Semi-structured interviews	13 coaches	Eight males Five females 29-62 years old (Mean age: 45 years old)	Team sports: Basketball, baseball, football, ice hockey, rowing, soccer, volleyball  Individual sports: Golf, tennis, swimming, diving, gymnastics	Years of coaching experience: One to 31 years  Level of competition: Intercollegiate NCAA Division I Collegiate	Severity: Minimum requirement of four to seven days of time-loss from sports participation

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Newman &amp; Weiss (2018)</b>	Quantitative	SSQ	246 athletes	108 males 138 females 18-24 years old (Freshmen to seniors)	Team sports: Basketball, football  Individual sport: Wrestling	Level of competition: Intercollegiate; 111 NCAA Division I Collegiate 35 NCAA Division II Collegiate 100 NCAA Division III Collegiate  Role in team: 108 Starters 122 Non-starters  Revenue: 78 Revenue sport 168 Non-revenue sport	Severity: > a week of time-loss from sports participation
<b>Podlog &amp; Dionigi (2010)</b>	Qualitative	Semi-structured interviews	Eight coaches	Five males Three females 25-53 years old	Team sports: Field hockey, rowing, waterpolo, netball  Individual sport: Athletics	Years of coaching experience: Four months to 25 years  Level of competition: Elite	Severity: Severe; > two months of time- loss from sports participation

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Podlog &amp; Eklund (2007)</b>	Qualitative	Semi-structured interviews	14 coaches	10 males Four females Unknown ages	Team sports: Rugby, field hockey, waterpolo  Individual sports: Squash, athletics, swimming	Level of competition: Elite	Severity: Serious
<b>Podlog et al. (2013)</b>	Qualitative	Semi-structured interviews	11 athletes	Three males Eight females 12-17 years old (Mean age: 15.3 years old)	Team sports: Basketball, netball, soccer, rowing  Individual sport: Track and field	Level of competition: Elite (National, regional, state)	Types: One torn ACL Two shoulder dislocations Two knee dislocations One broken fibula One broken arm Two back injuries One achilles injury  Severity: Minimum requirement of one month time-loss from sports participation (Mean: 5.41 months) (Range: One to 13 months)

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Podlog et al. (2015)</b>	Qualitative	Semi-structured interviews	Seven athletes	Four males Three females 18-30 years old (Mean age: 21.9 years old)	Team sports: Soccer, rugby union  Individual sports: Gymnastics, martial arts	Level of competition: Two club Two regional Two national One professional	Type: Metatarsal fracture, ruptured posterior cruciate ligament, ankle ligament damage, ankle fracture, bruised bone in foot, Achilles tendon damage, grade II hamstring tear.  Severity: Minimum requirement of two month time-loss from sports participation (Range: Four to 36 months)
<b>Podlog, Lochbaum &amp; Stevens (2010)</b>	Quantitative	Need Satisfaction Scale (modified version) Positive and Negative Affect Scale (PANAS) Self-Esteem Scale (SES) Subjective Vitality Scale (SVS) Return-to-Sport after Serious Injury Questionnaire (RSSIQ)	204 athletes	138 males 66 females 18-36 years old (Mean age: 21.75 years old)	Team sports: American football, rugby League, Australian rules football, soccer, ice hockey, volleyball, basketball, baseball, softball  Individual sports: Wrestling, athletics, swimming, gymnastics, tennis, triathlon	Level of competition: 37 professional 28 international 13 national 126 intercollegiate	Severity: Minimum requirement of two month time-loss from sports participation (Mean: Four months)

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Robbins &amp; Rosenfeld (2001)</b>	Quantitative	SSQ	35 athletes	19 males 16 females 18-24 years old (Freshmen to seniors)	Team sports: Soccer, field hockey, football, crew (rowing), lacrosse, volleyball, softball  Individual sports: Wrestling, track and field, cross-country, fencing, gymnastics	Level of competition: Intercollegiate NCAA Division I Collegiate  Role in team: 24 Starters Seven non-starters  Revenue: Five revenue sport 30 Non-revenue sport	Severity: Six minor injuries (< a week) 11 moderate injuries (Eight to 21 days) 17 severe injuries (>21 days)
<b>Ruddock-Hudson, O'Halloran &amp; Murphy (2014)</b>	Qualitative	Semi-structured interviews	Eight athletes	All male (Mean age: 24.5 years old)	Team sport: Australian football	Level of competition: National; Australian Football League (AFL)	Type: Medial ligament knee tear, quadriceps tear, osteitis pubis, anterior cruciate ligament rupture of the knee, broken tibia and fibula, skull fracture, tibial stress fracture, broken ankle.  Severity: Time-loss from sport (Mean: 24.5 weeks) (Range: Nine weeks to 10 months)

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Sullivan et al. (2022)</b>	Quantitative (Prospective cohort design)	20-item Center for Epidemiological Studies Depression Scale (CESD) 40-item State-Trait Anxiety Inventory (STAI) SSQ	597 athletes	400 males 197 females 18-24 years old (Freshmen to seniors)	Team sports: Baseball, basketball, football, field hockey, soccer, softball, volleyball  Individual sport: Wrestling	Level of competition: Intercollegiate NCAA Division I Collegiate	Severity: 237 injuries (Time loss of < a week) 168 injuries (Time loss of one week to one month) 88 injuries (Time loss of one to three months) 63 injuries (Time loss of three to six months) 38 injuries (Time loss of > six months)
<b>Wadey et al. (2013)</b>	Qualitative	Semi-structured interviews	Eight coaches	All male 30-59 years old (Mean age: 45.7 years old)	Team sports: Waterpolo, rugby union, basketball, netball  Individual sports: Swimming, trampolining, diving, weight lifting	Years of coaching experience: Four to 32 years (Mean: 17.1 years)  Level of competition: One club One county One regional Two national Three international	Severity: Serious; minimum requirement of six weeks' time-loss from sport participation

Author and year of publication	Study type	Method of data collection	Number and type of participants	Participant demographics (Gender and Age)	Sporting types (Team and/or Individual)	Characteristics of sports participation (Years of coaching experience, level of competition, role in team, revenue)	Injury profile (Amount, type, and/or severity)
<b>Yang et al. (2010)</b>	Quantitative (Prospective observational design)	SSQ	256 athletes	167 males 89 females Minimum age: 18 years old (Mean age: 20 years old)	Team sports: football, baseball, spirit squad, rowing, basketball, field hockey  Individual sports: Wrestling, gymnastics, golf, tennis, cross-country, track and field	Level of competition: Intercollegiate NCAA Division I Collegiate	Amount: 92 injured athletes (58 with at least one injury and 34 with more than one injury)  Severity: Minimum requirement of one day time-loss from sports participation

### 2.3.3 Study outcomes

Social support was the most commonly reported outcome (17 studies) (Bon & Doupona, 2021; Borg, Falzon & Muscat, 2021; Carson & Polman, 2012; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; Grindstaff, Wrisberg & Ross, 2010; Hallquist, Fitzgerald & Alricsson, 2016; Hildingsson, Fitzgerald & Alricsson, 2018; Kunnen et al., 2021; Malinauskas, 2008; Newman & Weiss, 2018; Podlog et al., 2013; Podlog et al., 2015; Robbins & Rosenfeld, 2001; Ruddock-Hudson, O'Halloran & Murphy, 2014; Sullivan et al., 2022; Yang et al., 2010). Social support satisfaction was analysed by seven of these studies (Bon & Doupona, 2021; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; Malinauskas, 2008; Robbins & Rosenfeld, 2001; Sullivan et al., 2022; Yang et al., 2010), and social support amount/availability by six studies (Bon & Doupona, 2021; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; Newman & Weiss, 2018; Robbins & Rosenfeld, 2001; Sullivan et al., 2022), while the impact of social support on wellbeing was investigated by five studies (Bon & Doupona, 2021; Clement & Shannon, 2011; Corbillon, Crossman & Jamieson, 2008; Malinauskas, 2008; Robbins & Rosenfeld, 2001).

A total of 10 studies reported on injury and rehabilitation stress, coping and experiences (Borg, Falzon & Muscat, 2021; D'Astous et al., 2020; Gilbert, Lyon & Wahl, 2015; Grindstaff, Wrisberg & Ross, 2010; Hildingsson, Fitzgerald & Alricsson, 2018; Podlog & Dionigi, 2010; Podlog et al., 2013; Podlog et al., 2015; Ruddock-Hudson, O'Halloran & Murphy, 2014; Wadey et al., 2013).

RTS outcomes were commonly analysed in 12 studies (Borg, Falzon & Muscat, 2021; Carson & Polman, 2012; Hallquist, Fitzgerald & Alricsson, 2016; Hildingsson, Fitzgerald & Alricsson, 2018; Iñigo, Podlog & Hall, 2015; Kunnen et al., 2021; Podlog & Dionigi, 2010; Podlog & Eklund, 2007; Podlog et al., 2013; Podlog et al., 2015; Podlog, Lochbaum & Stevens, 2010; Ruddock-Hudson, O'Halloran & Murphy, 2014).

Only four studies reported on coach's knowledge (Hallquist, Fitzgerald & Alricsson, 2016; Kunnen et al., 2021; Maurice, 2019; Maurice et al., 2021), while a further four studies commented on motivation (Chan, Hagger & Spray, 2011; D'Astous et al., 2020; Hildingsson, Fitzgerald & Alricsson, 2018; Podlog et al., 2015). See Table 2 for a detailed description of the study outcomes for each study in this review.

Table 2: Study outcomes

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
<p><b>Bon &amp; Doupona (2021)</b></p>	<p><b>Satisfaction:</b> Social support satisfaction was reported the highest for family, and the lowest for coaches.</p> <p><b>Amount:</b> Families offered the most social support, followed by physiotherapists, teammates and partners, while coaches' scores were the least.</p> <p><b>Impact on wellbeing:</b> Athletes highlighted the importance of the head coach's role in the last phase of rehabilitation.</p> <p><b>Coaches' delivery:</b> Coaches considered providing social support too demanding. Internal conflict between focusing on the team's performance, while providing support to injured athletes. Coaches felt they were not competent enough to provide sufficient, quality social support. Coaches reported negative experiences with some athletes that took social support for granted and did not express any gratitude or solidarity.</p>				

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
<b>Borg, Falzon &amp; Muscat (2021)</b>	<p><b>Initial injury:</b> Athletes valued support from coaches, indicating they were very supportive during initial stages of injury.</p> <p><b>Rehabilitation:</b> Coaches' listening and emotional support was crucial during rehabilitation. Coaches' belief in injured athletes helped improve their self-image. Empathy, understanding and sensitivity to injured athletes helped accelerate rehabilitation and lessened their mental struggles.</p>	Coaches pressurised athletes to continue playing through pain as pain tolerance is seen as a form of toughness.	Coaches' feedback boosted athletes' self-confidence, guiding them on how to improve.		
<b>Carson &amp; Polman (2012)</b>	The importance of social support provided by coaches was highlighted, specifically the provision of positive feedback.		<p><b>Pre-RTS:</b> 'Star players': Coaches provided encouragement, and held discussions on expectations. 'Non-key performers': No discussions on expectations. Feelings of isolation.</p> <p><b>Post-RTS:</b> Coaches are important for goal setting which reduced athletes' anxieties.</p>		
<b>Chan, Hagger &amp; Spray (2011)</b>					Autonomy support from coaches formed positive associations with autonomous sport motivation, however, was only related to sport motivation and not treatment motivation.

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
<p><b>Clement &amp; Shannon (2011)</b></p>	<p><b>Satisfaction:</b> Athletes were more satisfied with social support provided by athletic trainers than by teammates or coaches. Athletes were more satisfied with listening support than reality-confirmation support.</p> <p><b>Availability:</b> There was greater availability of social support provided by athletic trainers than teammates or coaches.</p> <p><b>Impact on wellbeing:</b> There was a greater contribution of social support to athletes' wellbeing provided by athletic trainers than teammates or coaches. Listening, emotional, reality-confirmation, and task-appreciation support contributed more to athletes' wellbeing, compared to tangible support.</p> <p><b>Additional findings:</b> No relationships were found between social support and previous injury. Age and year in school was negatively correlated with satisfaction of coaches' tangible support. No differences were found based on severity of injury.</p>				

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
<p><b>Corbillon, Crossman &amp; Jamieson (2008)</b></p>	<p><b>Satisfaction:</b> Athletes were more satisfied with task-challenge support provided by coaches compared to their teammates. Athletes were most satisfied with listening and task-challenge support provided, and least with tangible-assistance and reality-confirmation support provided by coaches.</p> <p><b>Availability:</b> Teammates' availability of emotional support was greater than coaches. Coaches provided the greatest availability of listening support, and least availability of tangible-assistance.</p> <p><b>Impact on wellbeing:</b> There was a greater contribution towards athletes' wellbeing for task-challenge support, and least for reality-confirmation support provided by coaches compared to teammates. Task-appreciation and task-challenge support provided by coaches contributed the most towards athletes' wellbeing, while tangible-assistance and emotional-challenge support contributed the least.</p>				

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
	<p><b>Gender differences:</b> Females reported greater contributions of emotional-challenge support provided by coaches.</p> <p><b>Age differences:</b> Age was not related to social support provided by coaches.</p> <p><b>Years of coaching experience and number of athlete injuries:</b> Both showed negative relationships with social support provided by coaches.</p> <p><b>Athlete's role in the team:</b> 'Starters' reported higher satisfaction and greater contributions towards their wellbeing regarding task-appreciation support provided by coaches.</p>				
D'Astous et al. (2020)		<p><b>Goal setting:</b> Coaches could encourage adoption of task-approach goals by emphasising effort, task-completion, correct form, and consistency. Coaches can help injured athletes by using language that orients athletes towards attaining success as opposed to avoiding failure.</p>			Comparison to others, one's preinjury self, or one's perceived potential, should be avoided, this could be detrimental to athletes' motivation and enjoyment.

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Gilbert, Lyon & Wahl (2015)		<p><b>Injury and rehabilitation stress:</b> Injured athletes may experience injury and rehabilitation stress through physical restrictions, feelings of isolation, time and effort spent on rehabilitation, and fear of re-injury.</p> <p><b>Injury and rehabilitation coping:</b> Coaches can facilitate athletes' recovery from injury and rehabilitation by scheduling rehabilitation around team training/events, promoting social support structures, including injured athletes in training, accompanying rehabilitation sessions, sharing motivational injury recovery stories, setting goals, and employing imagery and positive self-talk. Coaches must consider availability of resources and time-demands.</p>			
Grindstaff, Wrisberg & Ross (2010)	Coaches provision of social support (caring and sympathising, not giving up on them, and being 'more than just a coach') was considered instrumental. Athletes had to approach coaches to receive support.	<p><b>Injury experiences:</b> Unsympathetic coaches exacerbated negativity for injured athletes. Some coaches blamed athletes for getting injured, showing lack of empathy. Injured athletes thought they had let their coaches down. Athletes felt excluded from the team. Injured athletes valued viewing their sport from a coaching perspective.</p>			

<b>Author and year of publication</b>	<b>Social support</b>	<b>Injury and rehabilitation stress, coping and experiences</b>	<b>Return to sport (RTS)</b>	<b>Coach's knowledge</b>	<b>Motivation</b>
<b>Hallquist, Fitzgerald &amp; Alricsson (2016)</b>	Coaches reported the importance of including injured athletes in the team, and showing their understanding towards them and their injury. Coaches were unsure who had the responsibility to support athletes. Children may be more sensitive to emotional distress after injury, and lack self-confidence and control with rehabilitation.		Coaches felt girls found it more difficult to RTS.	Coaches expected medical staff to guide them how to support young, injured athletes as they lacked sufficient time and knowledge. Coaches felt they lacked education in psychological training, and expressed the importance of having experience in dealing with the psychological aspects of injury.	
<b>Hildingsson, Fitzgerald &amp; Alricsson (2018)</b>	Receiving support from coaches was seen as comforting. Some coaches asked athletes how they were proceeding and how things were going both inside and outside of sport, which was appreciated.	Lack of coaches' support during rehabilitation made some athletes avoid team training sessions and decreased their sense of belonging to the team.	Some athletes mentioned that coaches pushed them to RTS quickly, with high expectations, which became stressful when not fully ready.		Some athletes tried performing rehabilitation at home but felt lonely and demotivated.
<b>Iñigo, Podlog &amp; Hall (2015)</b>			Sense of obligation to continue playing after injury was a driving force for injured athletes, as coaches' pressure and motivation was instrumental to RTS. Coaches served as sources of social constraint to RTS. Coaches' provision of social support increased athletes' commitment to RTS.		
<b>Kunnen et al. (2021)</b>	A common strategy for addressing barriers to relatedness is social support from coaches.		Athletes did not report pressure to RTS from their coaches. Coaches have a key role in building athletes' confidence to be psychologically ready for RTS, primarily through providing positive feedback.	Athletes relied on their own mental strategies owing to absence of a coach educated in psychological skills training at their level of competition and/or a lack of awareness or finances to seek their own support.	

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Malinauskas (2008)	<p><b>Satisfaction:</b> Athletes were more satisfied with task-challenge and emotional-challenge support provided by coaches pre-injury compared to during rehabilitation.</p> <p><b>Impact on wellbeing:</b> Athletes perceived listening and emotional support provided by coaches as more important to their wellbeing during rehabilitation compared to pre-injury.</p>				

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Maurice (2019)				<p><b>Coaches' professional knowledge:</b> Coaches may use their professional knowledge to access and use resources, implement injury prevention techniques, monitor initial emotional responses, acknowledge rehabilitation performance decrements, include injured athletes in the team, and make safe RTS decisions.</p> <p><b>Coaches' interpersonal knowledge:</b> Coaches may use their interpersonal knowledge to effectively communicate with injured athletes, actively listen to them, and ensure trust and confidence in athletes.</p> <p><b>Coaches' intrapersonal knowledge:</b> Coaches may use their intrapersonal knowledge to reflect on their previous coaching/athletic experiences to inform their current provision of support for injured athletes.</p>	

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Maurice et al. (2021)				<p><b>Coaches' professional knowledge:</b> Coaches may use their professional knowledge to access and use resources, implement injury prevention techniques, monitor initial emotional responses, acknowledge rehabilitation performance decrements, include injured athletes in the team, and make safe RTS decisions.</p> <p><b>Coaches' interpersonal knowledge:</b> Coaches may use their interpersonal knowledge to effectively communicate with injured athletes, actively listen to them, and ensure trust and confidence in athletes.</p> <p><b>Coaches' intrapersonal knowledge:</b> Coaches may use their intrapersonal knowledge to reflect on their previous coaching/athletic experiences to inform their current provision of support for injured athletes.</p>	

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
<b>Newman &amp; Weiss (2018)</b>	<p><b>Amount:</b> Athletes perceived moderate-to-high levels of social support from their coaches.</p> <p><b>Level of competition:</b> NCAA Division II and III athletes perceived higher levels of social support from coaches compared to NCAA Division I athletes.</p> <p><b>Athletes' role in the team:</b> No differences in amount of social support when comparing starters and non-starters.</p> <p><b>Revenue:</b> Athlete involved in revenue sport perceived higher amounts of social support.</p>				
<b>Podlog &amp; Dionigi (2010)</b>		<p><b>Coaches' strategies to address athletes' psychosocial needs after injury:</b> Coordination of a 'team approach' to rehabilitation; fostering open communication with athletes and medical staff; provision of social support; ensuring positive thinking and goal setting; and suggesting role models.</p>	Coaches addressed competence, autonomy, and relatedness needs to facilitate athletes' RTS.		

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Podlog & Eklund (2007)			<p><b>Decision-making:</b>            Medical clearance is required. Clear communication between coaches and medical staff is key. Coaches' awareness of athletes' individual characteristics is important.</p> <p><b>Coaches' perceptions of the stressors:</b>            Physical: Fear of re-injury, fitness concerns, and effects of physical limitation on performance.            Social: Social isolation, pressure for early RTS, and negative social comparisons.            Performance: Falling behind others, team selection, and reaching pre-injury performance levels.</p> <p><b>Coaches' perceptions about their roles:</b>            Individual (one-on-one) training sessions, keeping athletes involved in sport, and providing social support.</p>		

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Podlog et al. (2013)	Athletes expressed the importance of social support from coaches to attain their goals and alleviate stress. Emotional support was the main form of social support received. Social support helped athletes maintain a positive outlook, enhanced their motivation to comply with rehabilitation, and facilitated physical and emotional healing.	<p><b>Injury stress:</b> In the middle-to-latter stages of rehabilitation, social exclusion and separation from the team was reported. Athletes felt helpless not being able to affect the match outcome.</p> <p><b>Goal setting:</b> Setting goals with coaches helped expedite athletes' recovery from injury by maintaining motivation, reducing injury uncertainties, and preserving focus on future performance.</p>	No athletes felt pressure to RTS from their coaches. Athletes relied on positive feedback from coaches to perceive their RTS as successful.		
Podlog et al. (2015)	Athletes placed emphasis on social support from coaches to increase their self-confidence and relieve injury concerns.	<p><b>Goal setting:</b> Coaches were influential in setting effective goals that facilitated realistic expectations.</p>	Positive feedback, reassurance, and informational support were integral to develop confidence to RTS.		Feeling wanted by coaches contributed to enhanced motivation levels. Coaches who expressed desire to have the injured athlete return and recognised the missed contributions of the injured athlete, helped energise athletes to achieve and surpass preinjury levels.
Podlog, Lochbaum & Stevens (2010)			Coaches indicated that ensuring athletes feel connected to their teammates and their sport through provision of emotional, tangible, and informational support is crucial to offset RTS stressors.		

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Robbins & Rosenfeld (2001)	<p><b>Satisfaction:</b> Satisfaction with task challenge support provided by assistant coaches was higher pre-injury compared to during rehabilitation. Athletes are more satisfied with social support provided by athletic trainers, compared to coaches. There are no differences between athletic trainers and coaches' for emotional-challenge support.</p> <p><b>Amount:</b> Athletes would accept and appreciate more social support from coaches during rehabilitation.</p> <p><b>Impact on wellbeing:</b> Listening, task-appreciation, task-challenge, and emotional support provided by athletic trainers was perceived as most important to athletes' wellbeing compared to that provided by coaches. There are no differences between coaches and athletic trainers regarding the importance of emotional-challenge and reality-confirmation support on athletes' wellbeing.</p>				

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
<p><b>Ruddock-Hudson, O'Halloran &amp; Murphy (2014)</b></p>	<p><b>Initial injury:</b> Athletes felt disengaged from the club while seeking social support. Coaches were identified as support providers. Athletes acknowledged the genuine concern that was shown by coaches. Athletes illustrated how coaches contacted them immediately after their injury and that they were optimistic about the prospect of full recovery.</p> <p><b>Rehabilitation:</b> Athletes received minimal support and interaction from coaches during rehabilitation.</p>	<p>Coaches offered injured players the opportunity to participate in match committee discussions, and assist in a coaching role.</p>	<p>Athletes felt pressure from coaches to perform at high standards. Athletes expressed it was hard to "get away from the attention" placed on them when returning from a long-term injury. There was still a lack of perceived support from coaches.</p>		

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Sullivan et al. (2022)	<p><b>Amount and satisfaction:</b> While the amount and satisfaction of social support increased from baseline to one week post-injury, no changes were observed from one week post-injury to RTS. There were greater amounts and satisfaction of social support received from family and friends, compared to sports personnel (coaches, athletic trainers, teammates). Satisfaction with social support received from sports personnel increased from baseline to one week post-injury, while there were no changes in amounts of social support. Injured athletes reported decreased satisfaction with social support received from sports personnel from one week post-injury to RTS, while there were no changes in amounts of social support.</p> <p><b>Effect on depression and anxiety:</b> No effects of changes in amounts and satisfaction of social support on changes in post-injury depression or anxiety, after adjusting for potential covariates.</p>				

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Wadey et al. (2013)		<p><b>Coaches' perceptions of athletes' stress-related growth:</b>  Athletes' beliefs: Rehabilitation adherence accelerates and improves injury recovery. Athletes are honest about injury thoughts and feelings and less focussed on the past and future.  Athletes' attitudes: Positive upon RTS, greater desire to learn and improve, stronger ability to cope with stress.  Athletes' knowledge: Greater knowledge of injury prevention, rehabilitation, recovery, and injury risk factors. Better emotional intelligence.  Athletes' sporting qualities: Increased sporting motivation.  Athletes' coping strategies: Refined coping skills to regulate emotions.  Athletes' social support: Stronger coach-athlete relationships throughout injury recovery through provision of sympathy, guidance, and support. Athletes see coaches as 'more than just a coach', and spend more time together.  Athletes' behavioural coping: Athletes were better at dealing with stress and adversity.</p>			

Author and year of publication	Social support	Injury and rehabilitation stress, coping and experiences	Return to sport (RTS)	Coach's knowledge	Motivation
Yang et al. (2010)	<p><b>Baseline satisfaction:</b> Fewer female athletes reported relying on coaches for social support. Female athletes reported higher satisfaction with social support received from all social support providers, except for coaches.</p> <p><b>Changes in satisfaction after injury:</b> Both male and female athletes reported relying more on coaches for social support after their injuries, and reported higher satisfaction with social support provided by coaches after their injuries.</p>				

## 2.4 Discussion

From the 27 studies included for analysis in this review, the following objectives i.e., factors influencing coaches' roles during rehabilitation and key features concerning coaches' roles during rehabilitation, are discussed below under relevant headings and sub-headings relating to the review's objectives. Gaps in current research are highlighted throughout the discussion, to address this objective.

### 2.4.1 Factors that may influence the coach's role during an athlete's rehabilitation following sports injury

#### 2.4.1.1 Participants demographics

Many athletes from studies in this review were college students between the ages of 18-24. Athlete age was not significantly associated with social support provided by coaches, however, athletes with more years of sporting experience, and therefore older in age, were less satisfied with coaches' social support (Corbillon, Crossman & Jamieson, 2008). Hence, older, more experienced athletes, expect and desire more from their coaches. Despite knowing that adolescents experience greater emotional delicacy, trouble relating to identity, and struggle with self-control (Podlog et al., 2013), studies have yet to extensively investigate the role of coaches on injured adolescent athletes' rehabilitation and how it may differ from older athletes with injury.

Only seven studies in this review included coaches (Bon & Doupona, 2021; Hallquist, Fitzgerald & Alricsson, 2016; Maurice, 2019; Maurice et al., 2021; Podlog & Dionigi, 2010; Podlog & Eklund, 2007; Wadey et al., 2013), with a majority gender split of 68% in favour of males. Differences in coaches' gender did not influence implementation of different psychological interventions (Podlog & Dionigi, 2010). While coaches have provided their perception of their roles throughout rehabilitation, more research including female coaches is needed, in determining whether coaches' gender influences athletes' rehabilitation.

Before injury, female athletes relied less on coaches for social support, and were less satisfied with its provision. However, once injured, they heavily depended on coaches (Yang et al., 2010). Injured female athletes reported greater contributions of emotional-challenge support provided by coaches on their wellbeing (Corbillon, Crossman & Jamieson, 2008).

While females were more satisfied with coaches' social support post-injury, low baseline scores indicate this may be due to female athletes seeking social support from other sources rather than coaches when they are uninjured, and not because more social support was provided to them once they became injured (Yang et al., 2010). Additionally, females are more willing to pursue help when encountering a healthcare crisis, and would hence approach more individuals, such as coaches, for social support (Sen, 2004). As only 42% of athletes were female, more analysis is needed to determine if coaches' roles during rehabilitation differ for athlete gender and whether various forms of psychosocial support are required.

#### 2.4.1.2 Different sporting types

Most studies included participants involved in both team and individual sports, while there were some studies that focused on team sport(s) only. Varying sporting types did not influence coaches' implementation of different psychological interventions when analysed qualitatively (Podlog & Dionigi, 2010). However, another study proposes that coaches from different sports express differing opinions on RTS (Podlog & Eklund, 2007). Hence, there is a need to explore coaches and athletes involved in varying sports contexts regarding their perceptions of RTS and rehabilitation. Quantitative methods are suggested to provide more information on these contextual factors (Podlog & Dionigi, 2010).

#### 2.4.1.3 Level of sporting competition

Most of the studies in this review focused on intercollegiate or elite/professional sport competed at national or international level, while there was a lack of emphasis on club, school, and recreational sport. Studies have acknowledged that there may be dissimilar findings when comparing different levels of sporting competition (Podlog & Dionigi, 2010; Podlog & Eklund, 2007; Robbins & Rosenfeld, 2001). Elite athletes and coaches have access to an extensive range of services and backroom staff, which is most likely less obtainable to non-professionals. Access to these services could influence coaches' utilisation of and perceptions towards psychological interventions targeted at assisting athletes' rehabilitation (Podlog & Dionigi, 2010). Furthermore, intercollegiate athletes may have different experiences with coaches' social support compared to school or club level athletes, owing to the abovementioned factors (Robbins & Rosenfeld, 2001). Contrasting different levels of competition could provide valuable insight into the varying influence of social support (Malinauskas, 2008).

#### 2.4.1.4 Athlete's role in the team

It is unknown whether there is a correlation between athletes' roles in their team and the extent of perceived social support they receive. Athletes who were starting players received significantly more social support from coaches, specifically task-appreciation support, when compared to non-starters (Corbillon, Crossman & Jamieson, 2008).

Furthermore, 'star players' received encouragement from coaches, and engaged with them in open discussions on their expectations regarding RTS. Whereas 'non-key performers' did not have these conversations with coaches, leading to feelings of isolation and discontent (Carson & Polman, 2012). Nevertheless, another study showed there were insignificant social support differences related to an athlete's position in the team (Newman & Weiss, 2018). 'Key players', who are often starters, may experience enhanced appreciation of hard-work and effort from coaches and receive more attention when recovering from injury as they may be considered more important for team performance and success (Corbillon, Crossman & Jamieson, 2008). On the contrary, all squad members contribute to the quality of the team's performance. Thus, experienced coaches may acknowledge this and equally provide social support to all injured athletes, regardless of their role in the team (Newman & Weiss, 2018). Due to contrasting findings, additional research is required to draw conclusions on the influence of athletes' roles in their teams on the extent of support coaches provide during rehabilitation.

#### 2.4.1.5 Injury profile

Injury severity was the most reported injury characteristic, however there were inconsistencies concerning the criteria to describe it. While minimum time-loss from training and competition due to injury was used to distinguish injury severity, there were discrepancies regarding how much time-loss was considered for inclusion. These time frames ranged from less than a week to 36 months. Athletes require different amounts and forms of social support during various rehabilitation stages. Initially, athletes require emotional support in attempting to accept their injury, whereas towards latter stages, informational support is deemed most important by athletes to ensure timely and effective RTS (Podlog & Eklund, 2007). Furthermore, athletes' emotional response to injury was dependent on injury severity, where prolonged injury timelines caused more anxiety (Ruddock-Hudson, O'Halloran & Murphy, 2012). Hence, athletes with severe injuries entailing extensive absence from sport require more support from coaches. Therefore, injury severity should be considered when analysing coaches' roles during rehabilitation (Ruddock-Hudson, O'Halloran & Murphy, 2014). Additionally, uniformity is needed amongst future studies in determining 'severe injury' classification.

Injury types were described by location, with lower limb injuries, specifically severe knee injuries being the most common. The integrated model of response to sports injury considers personal factors, such as injury type, to examine the psychological influence of injury (Wiese-Bjornstal et al., 1998). Yet, the studies in this review failed to compare psychological responses and differing injury types. Since athletes respond to injury rehabilitation differently, depending on their injury characteristics, further research is warranted regarding coaches' roles during rehabilitation, considering the influences of contextual factors such as injury type (D'Astous et al., 2020).

## 2.4.2 Key features of the coach's role during an athlete's rehabilitation following sports injury

### 2.4.2.1 Social support satisfaction

Throughout rehabilitation, athletes rely heavily on social support provided by coaches (Yang et al., 2010). However, overall findings suggest that athletes are more satisfied with the social support they receive from health practitioners such as athletic trainers and physiotherapists compared to coaches (Bon & Doupona, 2021; Clement & Shannon, 2011; Robbins & Rosenfeld, 2001). Feeling isolated from the team and coach during rehabilitation is proposed as a potential reason for this (Fernandes et al., 2014). Yet, athletes mentioned they would accept and appreciate more social support from coaches during their rehabilitation (Podlog & Dionigi, 2010; Robbins & Rosenfeld, 2001). Injured athletes were less satisfied with task- and emotional-challenge support provided by coaches during rehabilitation, compared to pre-injury (Malinauskas, 2008). In another study, injured athletes were most satisfied with listening and task-challenge support and least satisfied with tangible-assistance and reality-confirmation support provided by coaches (Corbillon, Crossman & Jamieson, 2008). One study reported that injured athletes were dissatisfied with the social support they received from their coaches initially, however highlighted the importance of the social support provided by coaches during the final phases of rehabilitation and RTS (Bon & Doupona, 2021). Hence, coaches should acknowledge athletes perceived satisfaction with their delivery of social support, and consider the stage of rehabilitation, to optimise its provision in meeting athletes' expectations. Furthermore, additional research is needed to reach a consensus on which forms of social support athletes require at various stages of rehabilitation.

#### 2.4.2.2 Social support amount and availability

A greater perceived amount and availability of social support decreases stress associated with athletes' rehabilitation and RTS (Smith, Smoll & Ptacek, 1990). Findings from studies in this review indicate that teammates availability of emotional support was significantly greater compared to that of coaches, whereas coaches provided the greatest availability of listening support, and least availability of tangible-assistance (Corbillon, Crossman & Jamieson, 2008). Furthermore, another study revealed that there was a significantly greater availability of social support provided by athletic trainers compared to coaches (Clement & Shannon, 2011). Yet, intercollegiate athletes perceived moderate-to-high amounts of social support from their coaches (Newman & Weiss, 2018). This may be because these coaches acknowledge that their athletes may be living away from home, and thus are likely to receive less family support (Corbillon, Crossman & Jamieson, 2008; Newman & Weiss, 2018; Yang et al., 2010). Therefore, more research is required to understand how these contextual factors influence the amount and availability of support provided by coaches during rehabilitation.

#### 2.4.2.3 Influence of social support on athletes' wellbeing

Social support provided by coaches was shown to be a vital psychosocial contributor to athletes' wellbeing during rehabilitation (Bon & Doupona, 2021). Athletes considered listening and emotional support from coaches as more important to their wellbeing during rehabilitation, compared to pre-injury (Malinauskas, 2008). Task-appreciation and task-challenge support provided by coaches were the most significant contributors towards athletes' wellbeing, while tangible-assistance support (Clement & Shannon, 2011) and emotional-challenge support (Corbillon, Crossman & Jamieson, 2008) contributed the least. However, injured athletes valued social support from athletic trainers as more important to their wellbeing when compared to that provided by coaches (Clement & Shannon, 2011). Future research should identify ways in which coaches can be more influential towards improving injured athletes' wellbeing during rehabilitation.

#### 2.4.2.4 Coaches' strategies

In addressing injured athletes' psychosocial needs, coaches reported using the following strategies: coordination of a "team approach" to rehabilitation, fostering open communication with athletes and treatment team members, providing social support, enforcing positive thinking and goal setting, and recommending role models (Podlog & Dionigi, 2010).

The suggested coping methods that coaches can use to facilitate athletes' recovery from injury include scheduling rehabilitation around team training/events, promoting social support structures, finding ways to include injured athletes in training, accompanying injured athletes during rehabilitation sessions, sharing motivational injury recovery stories, setting SMART goals, and employing imagery and positive self-talk (Maurice, 2019). While certain methods have been suggested to help coaches facilitate rehabilitation, their effectiveness is unknown. Future research should strive to assess the efficacy of these techniques in improving RTS outcomes and performance as well as enhancing athletes' psychological wellbeing.

## **2.5 Conclusion**

Due to the lack of research in this field, all studies were included that commented on coaches' roles during rehabilitation following sports injury, regardless of its' emphasis. This allowed for more studies to be reviewed, but may weaken the accuracy of findings. To avoid recall failure associated with retrospective analysis, future studies should consider the time between data collection and RTS (Kunnen et al., 2021). Longitudinal study designs (D'Astous et al., 2020) and prospective pre- to post-injury designs (Wadey et al., 2013) may address this. Future research should consider female coaches and athletes to establish gender differences for coaches' roles during rehabilitation. Attention to injured adolescent athletes is warranted to determine the impact of athletes' age on coaches' roles during rehabilitation. A variety of sporting types should be considered, including a greater focus on club, school and recreational sport. More emphasis is needed on the influence of contextual factors, such as the athlete's role in the team, other sources of support, and injury characteristics, when analysing coaches' roles during athletes' rehabilitation. Furthermore, consistent classification of injury severity is required. Future research is needed to agree on which forms of social support are desired at different rehabilitation phases. Prospective studies should recognise ways for coaches to be more influential during rehabilitation and evaluate their effectiveness at improving athletes' wellbeing. Coaches should also be better educated and trained to facilitate athletes' recovery from injury.

Despite a recent growth in research regarding the psychology of sporting injury, studies evaluating coaches' roles during rehabilitation following injury are scarce. Coaches should be important providers of social support for injured athletes, yet they lack adequate knowledge (Maurice, 2019; Maurice et al., 2021) and competency (Bon & Doupona, 2021) concerning the provision of support to injured athletes.

Factors to consider when exploring coaches' roles during rehabilitation include athletes' and coaches' age and gender, sporting type and level of competition, the athlete's role in the team, and injury characteristics. The major role that coaches play during rehabilitation is providing social support to injured athletes (Podlog & Eklund, 2007).

Social support satisfaction, amount and availability, as well as the timing of delivery of different forms and their perceived importance to athlete's wellbeing, are key concepts worth considering when analysing coaches' roles during rehabilitation. Coaches described methods for addressing athletes' psychosocial setbacks linked with injury and rehabilitation, however their effectiveness in facilitating better RTS outcomes and performance as well as improving athletes' psychological wellbeing remains uncertain.

Social support provided by coaches to athletes undergoing rehabilitation aids in maintaining the coach-athlete relationship, thereby preventing any unrest between the two upon RTS (Robbins & Rosenfeld, 2001). Given that the coach-athlete dyad plays a key role in sport (Jowett, 2017; Vigário, Teixeira & Mendes, 2020), it has been widely studied amongst coaches and non-injured athletes (Vigário, Teixeira & Mendes, 2020; Wadey et al., 2018). However, the possible impact of the coach-athlete dyad on rehabilitation following sports injury has still not been unequivocally investigated. This scoping review suggests that a positive coach-athlete relationship has the potential to improve an athlete's psychological wellbeing during rehabilitation.

## **CHAPTER 3: THE ROLE OF THE COACH-ATHLETE RELATIONSHIP DURING REHABILITATION FOLLOWING SEVERE KNEE INJURY IN ADOLESCENT ATHLETES**

### **3.1 Introduction**

Severe knee injury often warrants surgery and lengthy absence from sport (Arderm et al., 2011; Borque et al., 2021). Athletes are further required to undergo intense post-operative rehabilitation (Christakou & Lavallee, 2009), and thus are excluded from coaching mentorship. While severe injury presents physical suffering, psychological difficulties may also obstruct rehabilitation (Podlog et al., 2013). Thus, athlete's coping with injury influences their recovery, RTS, performance and QoL (Carson & Polman, 2010).

Research involving injury psychology has widely focused on adult, elite-level athletes, while comparatively less attention has been paid to injured adolescent athletes (Podlog et al., 2013). Adolescence may be a confusing period, typified by intensified emotional sensitivity, hormonal changes, concerns regarding identity and difficulties with self-control (Podlog et al., 2013), especially amongst males (Randell et al., 2016). Thus, unsurprisingly, age-related differences in injury psychology have been reported, specifically pertaining to adolescents' reactions to injury and rehabilitation (Podlog et al., 2013).

In addition to meeting academic requirements and upholding an assortment of responsibilities, young athletes must manage relationships with family, friends, teammates, and coaches (Phillips, 2017). Since the coach-athlete dyad is considered the most instrumental relationship in sport (Jowett, 2017; Vigário, Teixeira & Mendes, 2020), it is proposed that coaches may be ideally positioned to aid athlete's psychological coping and facilitate their rehabilitation experience (Podlog & Dionigi, 2010). Coach's provision of social support to athletes undergoing rehabilitation contributes towards preserving the coach-athlete relationship, thereby avoiding conflict upon RTS (Robbins & Rosenfeld, 2001). Yet, coaches are uncertain regarding their roles during an athlete's rehabilitation and the extent to which their influences may facilitate psychological recovery (King et al., 2023). Furthermore, injured athletes' satisfaction with their coach's support during rehabilitation remains unclear (Podlog & Dionigi, 2010).

It is proposed this may be due to coach's poor knowledge (Maurice, 2019; Maurice et al., 2021), incompetency (Bon & Doupona, 2021), and lack of skills to address athlete's psychological needs during injury rehabilitation (Podlog & Dionigi, 2010). Furthermore, athlete's reliance on their family (Yang et al., 2010) and physiotherapists (Clement & Shannon, 2011) for support, and coach's prioritising the team above injured athletes (Gilbert, Lyon & Wahl, 2015) may be additional contributing factors to consider.

There are no sports injury psychology studies conducted in any low-income countries (King et al., 2023). Africa is one of the least studied populations globally, where a limited scope of research in sports psychology has contributed to the widening knowledge gap (Sawyer, 2004). In SA, sports coaches may be integral providers of support for injured athletes due to a lack of sports injury psychology personnel and resources (Tshube, 2020). Moreover, studies on school sport are needed, particularly in SA where school sport has grown into a more professional and competitive environment (Lombard, 2018). There is a scarcity of literature analysing the role of the coach-athlete relationship during rehabilitation, particularly amongst injured adolescent athletes and amateur sports coaches in SA. Therefore, further inquiry into the role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes is required to better comprehend its influences on the provision of support during recovery from injury, performance, and wellbeing amongst non-elite coaches and adolescent athletes. The empirical study utilised a distinctive and innovative approach by including both coaches and athletes in the interview process. This novel design provides a unique, holistic lens through which to explore coach-athlete relationships, as incorporating both role players' perspectives may allow for a comprehensive and nuanced analysis of this complex dyadic relationship in sport. This approach may build upon gaps in the current literature by enriching the depth and breadth of knowledge in this limited field of research. The aim of this qualitative study was to explore the role of the coach-athlete relationship to determine its influences on rehabilitation following severe knee injury. Specific objectives have been previously stated in Section 1.2.2 (page 4).

## **3.2 Methodology**

### **3.2.1 Research design**

Qualitative methodology was employed, which allowed investigation of beliefs and processes by exploring narratives, individual experiences, and language (Slade et al., 2018).

A descriptive qualitative design was adopted, whereby particular incidents experienced by the participants were extensively described and summarised to draw meaningful conclusions (Lambert & Lambert, 2012).

### 3.2.2 Sample of participants

The study sample consisted of two groups of participants involved in coach-athlete dyads:

- 1) Adolescent athletes at Western Cape (WC) high schools undergoing, or just having undergone, rehabilitation following severe knee injury.
- 2) Sports coaches at WC high schools who are coaching adolescent athletes undergoing, or just having undergone, rehabilitation following severe knee injury.

### 3.2.3 Inclusion criteria

Athlete and coach participants were included if they: were male or female athletes or sports coaches at WC high schools; and had sufficient English language proficiency to participate in a basic interview conducted in English.

Athletes were included if they: were between the ages of 14 and 19 years old (as athletes older than 19 were ineligible to compete for their school and those younger than 14 were unable to participate in high school sport); had sustained a severe knee injury, defined as any injury to the knee joint resulting in absence from full training and matches for longer than 28 days (Gouttebauge, Aoki & Kerkhoffs, 2018) which was confirmed by a medical practitioner, that was independent to the study, within the last year; and had undergone surgery or opted for conservative, non-surgical management.

Coaches were included if they: had at least two years of experience in sports coaching at high school level (to warrant sufficient experience in managing injured, adolescent athletes undergoing rehabilitation following severe knee injury).

### 3.2.4 Exclusion criteria

Athlete and coach participants were excluded if they were unwilling to share the entirety of their experiences with rehabilitation;

if the athlete had undergone full return to competitive sport for longer than a month and was no longer involved in injury rehabilitation (thus avoiding recall failure and upholding the integrity of the interview); and if appropriate consent and assent was not obtained for their participation.

### 3.2.5 Sample size

A minimum of eight to 12 coach-athlete relationships was suggested. However, recruitment continued until 'information power' (Malterud, Siersma & Guassora, 2016) was obtained. According to Malterud, Siersma & Guassora's (2016) model, a study with high information power will require the least number of participants when the study aim is narrow; the specificity of the sample is dense; it is supported by developed theory; the interview dialog is robust; and the analysis incorporates detailed investigation of narratives. Hence, the abovementioned criteria was applied to this study to ascertain whether adequate information power was achieved.

Information power was achieved with a total of nine coach-athlete relationships (including eight coaches and nine athletes, where one coach was part of two separate coach-athlete relationships). At this point, information power was assumed where the researcher considered that the richness and meaningfulness of the data collected was adequate to answer the research aim and objectives (Braun & Clarke, 2022). This small sample size was sufficient for qualitative data acquisition, as depth of analysis was essential to this method of inquiry (Vasileiou et al., 2018).

### 3.2.6 Recruitment

Maximum variation sampling methods were used to ensure candidates represented a broad spectrum of perspectives to avoid bias (Etikan, Musa & Alkassim, 2016). Recruitment flyers (Appendix 3) were placed in and around high schools; local orthopaedic knee surgeons, physiotherapists, and Groote Schuur's Orthopaedic Outpatient Sports Clinic were informed about the study via email (Appendix 4) and provided with a digital recruitment flyer to pass on to suitable applicants. A variety of WC high schools located in varying socio-economic areas and across all sports leagues and divisions were approached. High school headmasters or heads of sport were contacted via email (Appendix 5), requesting for the email to be forwarded to their sports coaches, who then forwarded it to the athletes or their parents. Coaches were asked to forward emails to athletes (if 18 years or older) or an athlete's parent/legal guardian (if athletes were younger than 18). Recipients of the email referred to the attachments (recruitment flyer, informed consent/assent forms) for additional information. They were then required to contact the researcher for further information regarding inclusion in the study.

After each interview, participants were asked to suggest potentially suitable applicants or inform them about the study, to facilitate a 'snowballing' effect. All participants were recruited via email. No participants were recruited using the other methods of recruitment described above.

#### 3.2.6.1 Recruitment via email

A total of 70 recruitment emails were sent. All emails to orthopaedic knee surgeons (eight) and sports medical institutes (one) resulted in either a non-response (seven) or having no participants which met the eligibility criteria (two). Of the 44 high schools, 10 responded and four had participants, yielding eight coaches and three athletes. Of the 17 private-practice physiotherapists, eight responded and three had participants, yielding a further six athletes. There were no refusals or exclusions noted.

A total of nine coach-athlete relationships were included, of which three came from an independent, private school, and six came from three different public, quintile 5 schools in the WC. Quintile 1-3 schools are situated in underprivileged areas in SA where scholars do not pay fees as the government funds these schools. While quintile 4 and 5 schools are situated in affluent communities, they receive little to no state funding (White & Van Dyk, 2019). Despite higher quintile schools receiving less government funding, their affluent school governing bodies raise more funds for better resources compared to lower quintile schools (Stott, 2013).

#### 3.2.7 Data collection

A semi-structured interviewing approach, formed from contemporary injury rehabilitation literature, was used. Semi-structured interviewing allowed the researcher to ask pre-determined, open-ended questions whilst permitting the interviewer to probe further questioning where necessary to gain additional insight into areas of interest (Adams, 2015). Active listening, question flexibility, and prompting skills were utilised to gather rich, in-depth material from the viewpoint of participants (DeJonckheere & Vaughn, 2019).

Interviewing, as a method of qualitative data collection, allows for detailed investigation of behaviour and language through generation of rapport and conversation between an interviewer and interviewee. Interviews are best suited to this study as the researcher strives to capture a range of individual perspectives and experiences (Draper, 2009). Semi-structured interviews were chosen as structured interviewing may restrict the depth of inquiry, while unstructured interviewing may pose a risk of unreliability and invalidity, given the variability of questioning (Mannan, 2020).

Alternative qualitative data collection methods include focus groups, whereby a small group of participants are led by a facilitator to hold informal discussions concerning a particular topic. This methodology may be preferred for obtaining common views and opinions on a subject (Draper, 2009), and thus was not chosen for this study. Additionally, focus groups consisting of adults and minors may unveil inherent power imbalances. Open-ended questionnaires may be considered for larger samples as distribution of questionnaires is more cost- and time-efficient, however, can be considered inflexible and unreliable with a risk of poor response rates (Burcu, 2000).

### 3.2.8 Interviews

Interviews began with an introduction, which outlined the purpose and style of the interview. Confidentiality and the right to opt-out was reinforced, and verbal consent was obtained, in addition to written consent which was already provided. To build rapport, 'warm-up' questions were asked to gather relevant demographic information such as age, injury and rehabilitation characteristics, and level of play/coaching. Coaches were asked about coaching qualifications, experience, and other commitments. The decision to retrieve this information was also largely based on findings from the scoping review (King et al., 2023), which identified that factors to consider when exploring coaches' roles during rehabilitation include athletes' and coaches' age and gender; sporting type and level of competition; the athlete's role in the team; and injury characteristics. Refer to Table 3 which shows how findings from the scoping review conducted by King et al. (2023) were used to shape the domains forming part of the interview body.

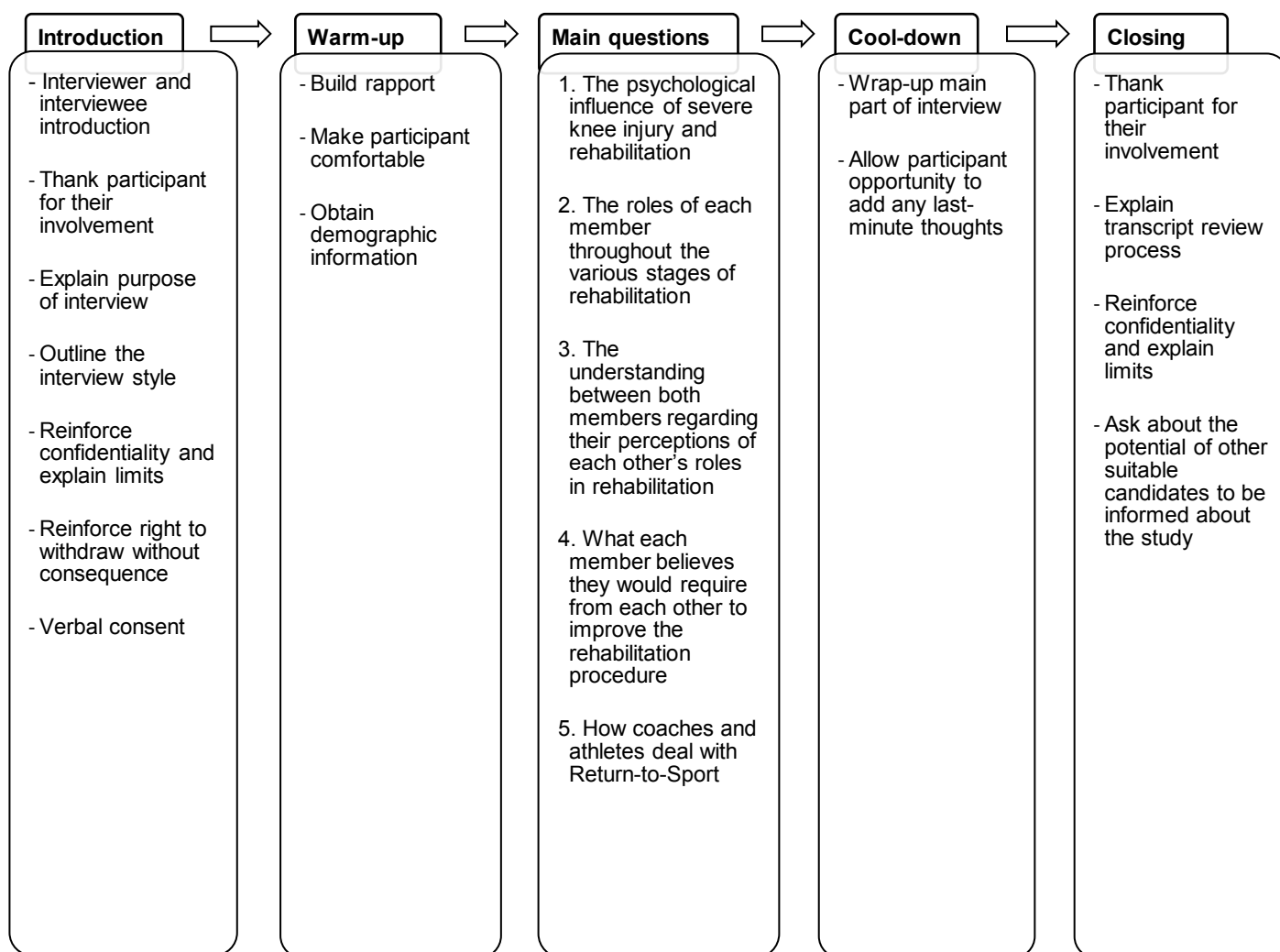
Table 3: Scoping review findings and interview body domains

Findings from scoping review (King et al., 2023)	Domains forming part of the interview body
<p>‘Cognitive thoughts, emotional responses, and behavioural reactions to injury influence athletes’ rehabilitation.’</p> <p>‘Coaches are psychologically affected by athletes’ injury, as they report that severe injury, and rehabilitation, are major stressors. Coaches may feel frustrated, which may negatively impact the team’s performance and the injured athlete’s morale.’</p> <p>‘Understanding the psychological influence of injury on rehabilitation is crucial to identify how athletes and coaches can confront these challenges both individually and as a pair in a strong coach-athlete relationship.’</p>	<p>The psychological influence of severe knee injury and rehabilitation on each member of the dyad (coach and athlete)</p>
<p>‘The major role that coaches play during rehabilitation is providing social support to injured athletes.’</p> <p>‘Inquiry is needed to agree on which forms of social support are desired at different rehabilitation phases.’</p> <p>‘In addressing injured athletes’ psychosocial needs, coaches use the following strategies: coordination of a “team approach” to rehabilitation, fostering open communication with athletes and treatment team members, providing social support, enforcing positive thinking and goal setting, and recommending role models. Coaches can facilitate athletes’ recovery from injury by: scheduling rehabilitation around team training/events, promoting social support structures, finding ways to include injured athletes in training, accompanying injured athletes during rehabilitation sessions, sharing motivational injury recovery stories, setting SMART goals, and employing imagery and positive self-talk.’</p>	<p>The roles of each member during various stages of injury rehabilitation</p>

<p>'Although athletes value input from their coaches during their injury rehabilitation, their satisfaction with the support provided is varied.'</p> <p>'Social support satisfaction, amount and availability, as well as the timing of delivery of different forms and their perceived importance to athlete's wellbeing, are key concepts worth considering when analysing coaches' roles during rehabilitation.'</p>	<p>The understanding between both members regarding their perceptions of each other's roles in injury rehabilitation</p>
<p>'Coaches described methods for addressing athletes' psychosocial setbacks linked with injury and rehabilitation, however their effectiveness in facilitating better recovery and improving athletes' psychological wellbeing remains uncertain.'</p> <p>'Investigation is needed to recognise ways for coaches to be more influential during rehabilitation and evaluate their effectiveness at improving athletes' wellbeing.'</p> <p>'Athletes mentioned they would accept and appreciate more support from coaches during their rehabilitation.'</p>	<p>What each member requires from one another to improve the coach-athlete relationship during rehabilitation</p>

<p>'Initially, injured athletes require emotional support, whereas towards latter stages, informational support is deemed most important by athletes to ensure effective RTS.'</p> <p>'Injured athletes were dissatisfied with their coaches' support initially, however highlighted the importance of their coaches' support during the final phases of rehabilitation and RTS. Hence, coaches should consider the stage of rehabilitation to optimise their provision of support in meeting athletes' expectations.'</p> <p>'It is necessary to reach a consensus on which forms of social support athletes require at various stages of rehabilitation. Investigation is needed to assess the efficacy of coaches' techniques to improve RTS outcomes and enhance athletes' psychological wellbeing.'</p> <p>'Social support provided by coaches to athletes undergoing rehabilitation aids in maintaining the coach-athlete relationship, thereby preventing any unrest between the two upon RTS.'</p>	<p>How coaches and athletes deal with RTS aiming for successful return to pre-injury performance.</p>
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The interview culminated by asking the interviewee for their final thoughts, followed by an appropriate closing phase. Finally, participants were requested to suggest additional, potentially suitable candidates. See Figure 3 for a summary of interview process and refer to the interview guide (Appendix 6) for a detailed description of the interview procedure.



*Figure 3: Interview process*

Combined interviews (interviewer, coach, and athlete) were not utilised as observation and analysis of interactions within the dyad were not central to the study objectives (Ummel & Achille, 2016). Thus, separate interviews, performed by the same interviewer were conducted (interviewer-coach and interviewer-athlete) to prevent possible manifestations of inherent power imbalances between adult coaches and minor athletes. Participants could comfortably share personal, in-depth experiences, whilst ensuring confidentiality.

Participants could fully express themselves in a safe environment, without influence of the other member of the dyad's reaction to criticism or potentially sensitive matters (Ummel & Achille, 2016).

Similarities and contrasts were drawn from each version of the same story from the viewpoint of each member of the coach-athlete relationship, without relinquishing the dyadic perspective and permitting analysis of findings both separately and concurrently (Ummel & Achille, 2016).

One-off interviews were chosen above multiple, follow-up interviews due to time- and cost-constraints associated with longitudinal designs (Wang & Cheng, 2020). Since this research explores a novel concept with a unique design, one-off interviews were preferred allowing for easier reporting of findings. Another consideration is the limited length of time that coach-athlete relationships within school sport endure for, given that when athletes progress from one age-group to another, they are likely to be coached by a different individual. Furthermore, school sport is seasonal and thus each sporting code usually lasts for only half of the year.

Meeting arrangements were established for participants, based on their availability and preference. The duration of each interview ranged from 27-66 minutes, with a mean interview length of 45 minutes. Interviews were held in-person at particular venues in Cape Town, that were accessible to both the interviewer and interviewee. The interview venues were secluded to ensure privacy. Face-to-face interviews were preferred, facilitating a natural environment for participants to express themselves in. This allowed the interviewer to build a strong rapport with the interviewee, yielding a more in-depth discussion. Interviews were conducted in English as much as possible to facilitate transcription and analysis. However, participants that preferred to answer in their preferred language of choice, were allowed to do so. Four participants (two athletes and two coaches) occasionally used Afrikaans phrases when they were unable to fully express themselves in English. The necessary translation and transcription into English followed accordingly.

### 3.2.9 Data management

Data was collected through audio recordings of the interviews on Zoom. A transcribing program, Otter.ai (<https://otter.ai>), was utilised to convert live recorded audio into script. The researcher re-listened to audio recordings while manually editing the transcription to confirm accuracy. The researcher manually transcribed 12 interviews, while a transcription service (<https://www.toptranscriptions.co.za>) was used to transcribe the remaining five interviews to help expedite the transcription process. NVivo, a qualitative data analysis program (<https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software>), was used to organise, store, and analyse information, accordingly.

The data collector and analyser was the primary researcher (student) who had novice experience in conducting semi-structured interviews or analysing qualitative data. Therefore, they obtained sufficient training by piloting mock interviews, completed short courses on how to use Nvivo software, and familiarised themselves with reflexive thematic analysis methods. The study supervisors had appropriate experience in these areas, and therefore provided guidance where possible.

### 3.2.10 Data analysis

Data analysis was performed using reflexive thematic analysis. Thematic analysis involved identification, analysis and reporting of themes emerging within data collected from qualitative methodology (Braun, Clarke & Weate, 2016; Vaismoradi, Turunen & Bondas, 2013). This theoretically flexible, interpretative approach (Braun & Clarke, 2012) was easily accessible, providing rich, in-depth information whilst permitting freedom to operate within clearly defined guidelines (Braun, Clarke & Weate, 2016).

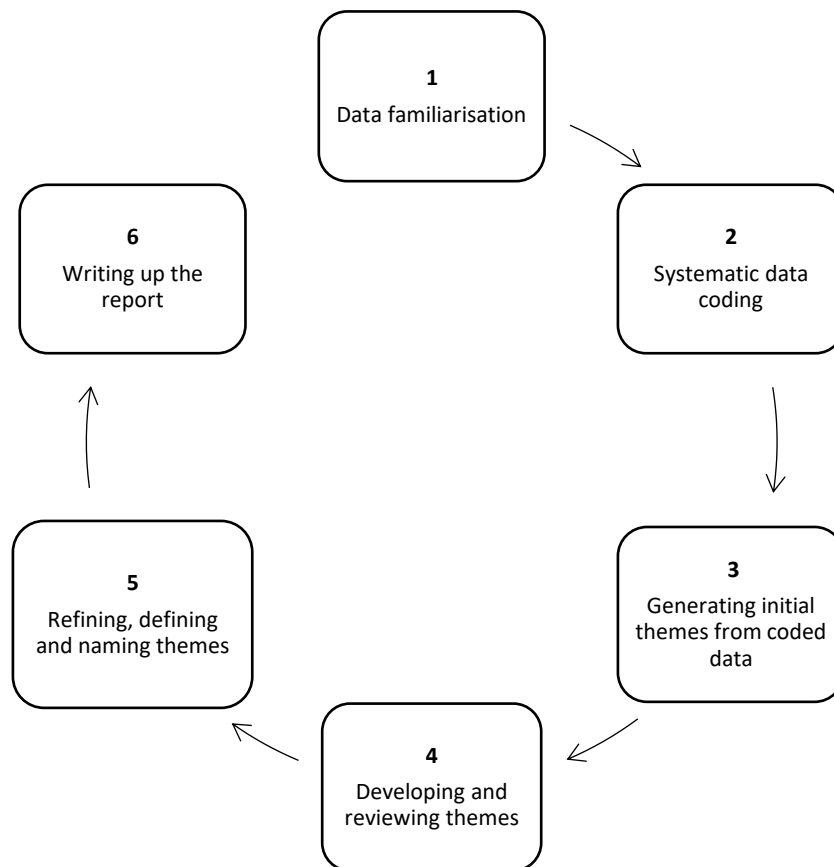
The term 'reflexive' recognises the importance of researcher subjectivity and reflexivity (Braun & Clarke, 2019). In addressing underlying theoretical assumptions, the researcher adopted a constructionist stance to epistemological consideration of the data, whereby meaning and experience was interpreted as part of a bidirectional understanding of language and therefore contributed towards the development of codes and themes, in addition to common recurrences of data (Byrne, 2021). An experiential orientation to data analysis was undertaken in attempt to explore and highlight the meaningfulness of data (Byrne, 2021). Hence, both semantic (explicit data) and latent (identification of underlying assumptions that further inform the data) coding strategies were used by the researcher (Byrne, 2021). The researcher applied 'reflexivity' by drawing up a reflective journal which was updated and maintained throughout the data analysis procedure. This created a platform for continuous self-awareness and documentation of the researcher's influence on the analysis, with the aim of recognising and addressing possible biases and preconceptions (Braun & Clarke, 2019). Furthermore, frequent discussions were held with the supervisory team to ensure multiple perspectives were considered to minimise individual subjectivity (Braun & Clarke, 2019). The application of reflexivity broadened the depth of data analysis, while ensuring transparency and reliability of the thematic analysis process.

An inductive approach was utilised whereby codes and themes were derived directly from the data manuscript (Braun, Clarke & Weate, 2016; Vaismoradi, Turunen & Bondas, 2013).

This respondent/data-driven approach to analysis was best suited for this exploratory design whereby codes were explicitly reflective of the data, which allowed for optimal representation of participants' meaning and experiences (Braun & Clarke, 2012). Deductive reasoning uses a theory-driven approach to identify codes that fit a pre-conceived framework. This may yield a superficial description of the data as the theoretical lens through which the data is analysed may focus on particular aspects of the data only (Byrne, 2021; Gale et al., 2013).

Braun and Clarke's thematic analysis was chosen for its systematic exploration of patterns and themes within qualitative data (Braun, Clarke & Weate, 2016). It offers a flexible framework that aligns with the study's research objectives, providing a nuanced understanding of complex themes (Braun & Clarke, 2012). Having been applied across multiple studies, it reflects credibility and effectiveness (Nowell et al., 2017), making it an appropriate choice for producing comprehensive insights and contributing meaningfully to the research literature. Boyatzis' approach to thematic analysis was discounted owing to the study's preference for a more inductive and data-driven process. Boyatzis' method reflects a more deductive stance, emphasising pre-determined codes derived from existing literature (Boyatzis, 1998). The study's exploratory nature aligned with the flexibility and responsiveness offered by Braun and Clarke's reflexive thematic analysis (Braun & Clarke, 2019). Thematic analysis was preferred as content analysis quantifies occurrences (Pope, Ziebland & Mays, 2000) which was not central to the research aims and objectives. Narrative analysis was discounted given the semi-structured nature of the interview questions. Grounded theory analysis involves the development of theories (Glaser & Strauss, 2017) which was not necessary for this research, while discourse analysis is a broad, timely and labour-intensive approach (Salignac, 2012).

Refer to Figure 4 which states the six stages of reflexive thematic analysis and outlines the procedure that was followed.



*Figure 4: Reflexive thematic analysis phases*

*Note: Adapted from One size fits all? What counts as quality practice in (reflexive) thematic analysis? By V. Braun & V. Clarke, 2020, Qualitative Research in Psychology, 18(3):328-352.*

Data familiarisation involved transcription, reading and re-reading, and documenting preliminary ideas. Noteworthy elements of the data were then coded systematically across the whole data set, collecting, and organising data relating to each code. Similar codes were then grouped into potential themes, whereby the researcher played an active role in generating the initial themes. Themes were then checked to fit regarding the extracted codes and the full data set, which helped to formulate a ‘thematic map’ (visual interpretation of the relationship between codes and themes). Through continuous analysis, details of each theme and the entire report that the analysis revealed was refined. Each theme was then clearly defined and named appropriately. Finally, the ultimate scholarly report was developed, whereby distinct and convincing data extracts were selected and analysed for review, with reference to the specifics of the research aim and objectives (Braun & Clarke, 2020; Braun, Clarke & Weate, 2016).

### 3.2.11 Data rigor

Lincoln's principles for qualitative inquiry were used to ensure data rigor (Lincoln, 1995). Trustworthiness and credibility were sufficiently met where transcripts were returned to participants to review. Negative case analysis was used to discuss contradictory themes, followed by deviant case analysis where trends which emerged from analysis were refined, expanded, and verified (Mays & Pope, 2000). Prolonged engagement and persistent observation were used to ensure that both the scope and depth of analysis were adequately achieved (Henry, 2015). Peer debriefing and reflexivity were done to unveil any implicit bias, perspectives, or speculations that the researcher may have had (Henry, 2015).

### 3.2.12 Ethical considerations

This study was granted ethical approval by the Human Research Ethics Committee (HREC) of the Faculty of Health Sciences at the University of Cape Town, with HREC reference number 257/2022 (Appendix 7). The principles of the Declaration of Helsinki (World Medical Association, 2013) were upheld. The WC Department of Basic Education approved for this study to be conducted (Appendix 8). The various WC high schools identified by the researcher provided necessary institutional approval.

#### 3.2.12.1 General principles

Neither member of the dyad knew whether the other member had agreed to participate in the study. This ensured that no coercion took place, upholding participant autonomy to make their own decisions regarding participation. Separate interviews allowed participants to safely express themselves without the influence of their counterpart. This avoided the potential for implicit power disparities to be expressed during the interview. Thus, harmful conditions were avoided, and the participants best interests were kept in mind, respecting non-maleficence and beneficence. Vulnerable socio-economic groups were considered for recruitment through approaching high schools from all sports leagues and divisions in the WC, ensuring fairness and justness in participation.

#### 3.2.12.2 Informed consent

Informed consent forms, for athletes older than 18 (Appendix 9) and coaches (Appendix 10), were attached to the respective recruitment emails. In the case of a minor (aged 14-17 years), a parent/legal guardian needed to provide informed consent (Appendix 11) to indicate their permission for their child to be approached to take part in this study.

Minor athletes then needed to independently complete an informed assent form (Appendix 12), which was a more easily comprehensible version of the informed consent form to ensure readability. Participants were informed during the consent/assent process that their decision to participate was voluntary and that they had the right to withdraw at any point without consequence. Athletes were notified that participation in the study would not influence team selection when returning to their sport and coaches would not be disadvantaged in any way.

#### 3.2.12.3 Confidentiality

Confidentiality was upheld through conducting separate interviews and was highlighted during the informed consent/assent process as well as before the interview. In the write-up, external confidentiality was achieved through anonymity. However, since the sample size was relatively small and findings were presented '*verbatim*', internal confidentiality was difficult to guarantee (Ummel & Achille, 2016). Participants were explicitly made aware of this during the informed consent/assent process and were reminded of this before the interview.

#### 3.2.12.4 Risks and benefits

There were minimal risks associated, however, since the interviews dealt with a potentially sensitive topic amongst a potentially vulnerable group, participants were offered appropriate referral to a psychologist if any indications of psychological distress were picked up during the interview. Although, no participants required referral. It was made clear to participants that there were no direct benefits for participating. However, infographics were given to each participant explaining the study findings and how it may influence their injury rehabilitation experiences within the context of coach-athlete relationships (Appendix 13).

#### 3.2.12.5 Access to data

Only the primary researcher (student) and supervisors were able to access original interview recordings and transcripts, through NVivo, a qualitative data analysis program. Additionally, a transcription service had access to interview recordings to convert verbal information into written script, so that the data could be interpreted, analysed, and presented. Anonymity was upheld throughout this process, so that the transcription service could not trace responses back to participants. All interviews were stored on a password-protected laptop to keep the information safe. Hard copies of signed informed consent/assent forms were stored in a safe.

Data will be kept for five years before being deleted/destroyed. The information gathered was used for the completion of a Masters' minor-dissertation, however, it is possible that the findings of this study could be included in an academic journal in the future.

### **3.3 Results**

#### **3.3.1 Characteristics of the sample**

##### **3.3.1.1 Coach-athlete characteristics**

A total of nine coach-athlete dyads were included, consisting of nine athletes and eight coaches. One coach (C8) was part of two separate coach-athlete relationships, forming a dyad with A8 and A9. Eight coach-athlete dyads were male-male, while one dyad was female-female. Six coach-athlete dyads were from public, quintile 5 schools. The remaining three dyads came from an independent, private school. The coach-athlete dyads came from a combination of sporting age-groups with differing team ranks. Coaches were self-described as either head or co-head coaches. Athletes were self-described as either non-starters, fringe players, starters, key-players or captains. A summary of the characteristics of the coach-athlete dyads is shown in Table 4.

Table 4: Characteristics of coach-athlete dyads

Coach-athlete dyads	Dyad gender	School classification	Sport where injury occurred	Age-group <sup>1</sup> and team rank <sup>2</sup>	Self-described role in team
<b>C1-A1</b>	Male-Male	Public (Quintile 5)	Rugby Union	U/15 D	C1: Co-head coach <sup>3</sup> A1: Non-starter <sup>4</sup>
<b>C2-A2</b>	Male-Male	Public (Quintile 5)	Rugby Union	U/16 A	C2: Head coach <sup>5</sup> A2: Key player <sup>6</sup> and vice-captain
<b>C3-A3</b>	Male-Male	Public (Quintile 5)	Rugby Union	U/14 A	C3: Head coach <sup>5</sup> A3: Key player <sup>6</sup> and captain
<b>C4-A4</b>	Male-Male	Independent (Private)	Rugby Union	U/15 B	C4: Head coach <sup>5</sup> A4: Starter <sup>7</sup>
<b>C5-A5</b>	Female-Female	Public (Quintile 5)	Netball	U/15 A	C5: Head coach <sup>5</sup> A5: Non-starter <sup>4</sup>
<b>C6-A6</b>	Male-Male	Public (Quintile 5)	Rugby Union	U/19 A	C6: Head coach <sup>5</sup> A6: Starter <sup>7</sup>
<b>C7-A7</b>	Male-Male	Public (Quintile 5)	Rugby Union	U/15 C	C7: Co-head coach <sup>3</sup> A7: Starter <sup>7</sup>
<b>C8-A8</b>	Male-Male	Independent (Private)	Rugby Union	U/19 A	C8: Head coach <sup>5</sup> A8: Fringe player <sup>8</sup>
<b>C8-A9</b>	Male-Male	Independent (Private)	Rugby Union	U/19 A	C8: Head coach <sup>5</sup> A9: Key player <sup>6</sup>

1. Age-group: Athletes are eligible to play for a specific age group dependent on their age at the beginning of the academic calendar year (January)
2. Team rank: Teams within an age group are ranked alphabetically with A team's being the strongest, followed by B, C and D teams
3. Co-head coach: A coach that is part of a dual coaching team where both coaches share the overall responsibility for the team
4. Non-starter: A player that is usually not selected in the starting line-up by the coach but is brought on to play as a substitute.
5. Head coach: The main coach that has the overall responsibility for the team.
6. Key player: A player that is fundamental to the performance of the team that the coach can rely on to make a positive impact on the result of the game.
7. Starter: A player that is usually selected in the starting line-up by the coach and is first choice for selection in their position.
8. Fringe player: A player that is inconsistently selected in the starting line-up by the coach and is selected based on current individual and team performance

### 3.3.1.2 Athletes' characteristics

Athletes' ages ranged from 15-17 years, with a mean age of 15.9 years. ACL rupture, with/without additional damage, was commonly observed in five athletes. All injuries were managed surgically, except for one. All athletes received rehabilitation from a physiotherapist. The estimated duration of absence from sport ranged from two to 12 months, with a mean time of 8.9 months. At the time of the interviews, all but one athlete was still undergoing rehabilitation, with most of them halfway to full recovery. A summary of the athletes' characteristics is shown in Table 5.

Table 5: Athletes' ages and injury characteristics

Athletes	Age	Knee injury type and severity	Management		Estimated duration of absence from sport	Stage of rehabilitation at time of interview
			Orthopaedic	Physiotherapist-driven rehabilitation		
A1	15	ACL <sup>1</sup> avulsion	Surgical: Tibial fracture repair	Yes	Nine months	Four months post-op
A2	16	MCL <sup>2</sup> strain (Gr I) <sup>3</sup>	Conservative: Knee extension brace for six weeks	Yes	Two months	Returned to sport 14 days ago
A3	15	Lateral meniscus tear	Surgical: Lateral meniscus repair	Yes	Six months	Three months post-op
A4	16	ACL <sup>1</sup> tear (Gr III) <sup>3</sup> , MCL <sup>2</sup> strain (Gr II) <sup>3</sup>	Surgical: ACL reconstruction	Yes	12 months	Six months post-op
A5	15	ACL <sup>1</sup> tear (Gr III) <sup>3</sup> , medial+lateral meniscus damage	Surgical: ACL reconstruction and meniscal repairs	Yes	12 months	Seven months post-op
A6	17	ACL <sup>1</sup> tear (Gr III) <sup>3</sup>	Surgical: ACL reconstruction	Yes	12 months	Six months post-op
A7	15	ACL <sup>1</sup> tear (Gr III) <sup>3</sup> , medial+lateral meniscus damage, bone bruising	Surgical: ACL reconstruction and meniscal repairs	Yes	12 months	Seven months post-op
A8	17	Lateral meniscus tear	Surgical: Lateral meniscus repair	Yes	Nine months	Four months post-op
A9	17	Medial meniscus tear, MCL <sup>1</sup> strain (Gr II) <sup>3</sup>	Surgical: Medial meniscus repair	Yes	Six months	Six weeks post-op

1. ACL: Anterior Cruciate Ligament
2. MCL: Medial Collateral Ligament
3. Grading of severity: Gr I – mild, Gr II – moderate, Gr III – severe

### 3.3.1.3 Coaches' characteristics

Coaches' ages ranged from 21-39 years, with a mean age of 29.4 years. Coaching experience ranged from two to 16 years, with a mean coaching experience of 7.6 years. There were seven rugby union coaches who completed the mandatory South African Rugby Union's (SARU) BokSmart National Rugby Safety Programme certification. Four rugby union coaches had extra coaching qualifications. Six coaches had previous experience in coaching athletes with severe knee injuries. All coaches had at least one other commitment aside from coaching, including another job or educational responsibility. A summary of the coaches' characteristics is shown in Table 6.

Table 6: Coaches' ages and coaching characteristics

Coaches	Age	Years of coaching experience in sport where athletes' injury occurred	Coaching qualifications	Previous experience in coaching athletes with severe injury?	Additional commitments
C1	21	Two years	SARU BokSmart Rugby Safety Programme	No	Undergraduate university student
C2	29	Nine years	SARU BokSmart Rugby Safety Programme, World Rugby L2 coaching, Post-grad diploma in sport	Yes	Permanent teacher and sports co-ordinator
C3	27	Eight years	SARU BokSmart Rugby Safety Programme	No	Student teacher
C4	22	Two years	SARU BokSmart Rugby Safety Programme	Yes	Undergraduate university student, junior boarding house master, university rugby union player
C5	39	Seven years	None	Yes	Head of Netball
C6	38	16 years	SARU BokSmart Rugby Safety Programme, World Rugby L2 coaching	Yes	Financial advisor
C7	24	Seven years	SARU BokSmart Rugby Safety Programme, World Rugby L1 coaching	Yes	Undergraduate university student, junior boarding house master
C8	35	10 years	SARU BokSmart Rugby Safety Programme, World Rugby L2 coaching	Yes	Financial advisor, post-graduate university student

### 3.3.2 Themes

There were three main themes which developed from the qualitative, reflexive thematic analysis procedure. Themes were further divided into smaller sub-themes. The main themes and sub-themes are presented in Table 7, with inclusion of raw data examples to support each sub-theme.

Table 7: Main themes and sub-themes

Main themes	Sub-themes	Raw data examples
<b>Social support</b>	Emotional support	<p>A1 <i>“was a bit distraught”</i> when sustaining their injury, so C1 <i>“made sure he was okay by comforting him”</i>.</p> <p><i>“I didn’t have an emotional bond with my coach to help me through it [injury rehabilitation]... He could’ve checked-up on how I was coping”</i>. A2 believed, <i>“it [the coach-athlete relationship] would’ve been closer if he [the coach] showed that he cared”</i>.</p>
	Informational support	<p>Athletes wanted coaches to <i>“help to learn more about the sport”</i> (A1) by <i>“teaching tactics and game plans”</i> (A5). A3 thought, <i>“He [the coach] could help grow my knowledge and teach me skills”</i>. A1 suggested, <i>“He [the coach] could’ve given me tips, as I’m sure he has experienced players with knee injuries before”</i>.</p>
	Tangible support	<p><i>“I should’ve asked if he [the coach] could arrange funding for physio sessions. I thought, because I’m on scholarship, it should’ve been done. So, because that wasn’t done, that wasn’t really a good thing for our relationship”</i> (A2). In contrast, A9, who was also on a scholarship, received tangible support from C8, <i>“He [the coach] organised my knee brace which was nice of him to help out with that”</i> (A9).</p> <p>C8 was the only coach that was proactive in their athletes’ rehabilitation, providing them with their own personal assistance, <i>“I take an active role during rehabilitation, I’m hands-on with the players in the gym and on the field”</i> (C8).</p>

	<p>'How much is enough'</p>	<p><i>"Maybe I could've provided more support during their rehabilitation" (C5).</i></p> <p><i>"I could've been more supportive. I didn't do enough. But also, he [the athlete] didn't show much interest in staying close to me" (C1). "I could've communicated more with my coach. But I didn't really try communicating with him either" (A1).</i></p> <p><i>"How actively involved should coaches be in the rehabilitation process" (C2).</i></p>
	<p>Knowledge, experience and awareness</p>	<p><i>"It didn't cross my mind... I didn't consider the impact I could have on his [the athlete's] rehabilitation" (C1).</i></p> <p><i>"Whether I'm qualified enough to guide someone in quite a psychological role is debatable" (C3).</i></p> <p><i>"I didn't have much coaching experience, but I thought I had adequate skills to do the job" (C1).</i></p>
	<p>Social inclusivity in the team</p>	<p><i>"We [the athlete and coach] have a good bond because she [the coach] included me in the team" (A5).</i></p> <p>A1 felt <i>"left out and isolated from the team and coach during rehabilitation"</i>.</p> <p><i>"I felt a true connection with my coach and team when I was playing. But when I got injured, I was sad I wouldn't be part of the team... When I was in the team I was very close to my coach because he told me what to do and how to get better and we spoke in-person. But since my injury, we haven't spoken as much ... If I was included more in the team, I would've felt closer to my coach" (A6).</i></p>

	Person-centered approach	<p><i>"Knowing he [the coach] cares about my injury and actually notices me for more than just a player in his team, that would make me feel much better... If he showed interest in my injury and rehabilitation, our [coach-athlete] relationship would've been much closer" (A4).</i></p> <p><i>"My coach only talks about my knee and rugby-related things, he didn't show any interest in my personal life. I would like my coach to talk to me about other things to show they care for me as a person and not just a rugby player" (A3).</i></p> <p><i>"Our communication is more about how he [the athlete] is emotionally coping, and how he's doing mentally. So, we don't talk much about his injury, but more about how he is feeling with everything" (C6).</i></p>
<b>Multidisciplinary team</b>	Athletes' family and friends' roles	<p><i>"Just having time to get my mind off everything by spending time with my friends and chatting to them and having fun helped me a lot" (A9).</i></p> <p><i>"You have to get close to your family and ask them for advice because they are the only ones that will actually help you" (A2).</i></p> <p><i>"If I didn't have a supportive family, then I would've needed more support from my coach" (A1).</i></p>
	Physiotherapists' roles	<p><i>"I didn't really see my coach after my injury. Because I saw my physio more frequently, the relationship with my physio was better than the relationship with my coach ... If my physio wasn't as supportive, then I would've needed more support from my coach" (A1).</i></p> <p><i>"The physio gives the right guidance and tells you how to recover" (A8). A7 thought, "She [the physiotherapist] knows about the healing process and what to do".</i></p> <p><i>"I fully rely on the physiotherapist, who is objective, independent and qualified to manage medical aspects" (C2).</i></p>

	Coaches' deflecting their roles	<p><i>"Wrote him [the athlete] off when I found out he [A4] wouldn't play for the rest of the season ... The manager's role is administrative and supportive. The manager should handle the off-field stuff, they should check-up on the injured athlete" (C4).</i></p> <p><i>"It's difficult because I need to manage coaching aspects. I'm not saying this [maintaining the coach-athlete relationship during rehabilitation] isn't a coaching aspect as player management definitely is. But, as a teacher who is a head coach, my time is limited. During school, I can't deal with these issues properly. If I had more management staff, I could delegate roles to assistant coaches or the manager, to check-in with the injured athlete on behalf of the coaching group. But we don't have that luxury at school level. Maybe the manager could play a support function, because their role is quite diluted and miniscule in our set-up" (C2).</i></p>
	Coaches' prioritisation of injured athletes	<p><i>"My coach cares mostly about the team's performance. He doesn't focus on the injured players" (A6).</i></p> <p><i>"I'm concentrating on the on-field stuff with the players that are fit and not on what is happening off the field during rehabilitation" (C6).</i></p>
<b>Staff-scholar relationships</b>	Adult-minor considerations	<p><i>"I'm not allowed to message minor athletes privately on social media" (C2). "The [coach-athlete] relationship isn't going well. We [the athlete and coach] can't communicate because of a new school rule where teachers can't message students privately over the phone, it can only be on a [social media] group... It [the coach-athlete relationship] would be better if the coach could privately message me to personally give me advice and encouragement during rehabilitation" (A2).</i></p> <p><i>"It's tricky because you need to protect yourself as a coach and a boarding house master. You don't want to interact with a kid one-on-one or message them on social media... If I wanted to communicate with him [the athlete], I can't call or text him and ask how he's doing" (C7).</i></p>

	Part-time coaching	<p><i>"I'm only a part-time coach, I have university for long hours every day, so I was occupied, and it [communicating with A1] wasn't on top of my mind" (C1). "If he [the coach] was a teacher, I would've seen him quite a lot and we could've communicated more often which would've brought our [coach-athlete] relationship closer" (A1).</i></p> <p><i>"As a teacher, my time with players is limited. Although I want to communicate more with a player, I'm teaching, and I don't see them. Also, my time is limited with the team at training, so I need to make the most of every team session. So, at training I don't have time to talk to the athlete. It doesn't feel like I am making enough time, but I'm limited. I'm not a professional coach; I'm a teacher who coaches sport. In my capacity, I don't think I could allocate more time towards injured athletes" (C2).</i></p>
	Communication	<p><i>"It's important to check-in and ensure the athlete is fine" (C1). "When he [the coach] was communicating with me and showing interest, I felt our [coach-athlete] relationship was growing" (A1).</i></p> <p><i>"Because both of them [A8 and A9] are in the boarding house, it makes communication on campus much easier because they're always available" (C8).</i></p> <p><i>"We kept in contact while he was injured. We chatted on the phone with text messages, and I checked in to see how he was doing" (C6). "face-to-face communication would've been better" (A6). "At this school, we don't have a boarding house, so A6 goes home after school which makes it difficult to find time to chat with him in-person. So, I need to think of different ways to improve on in-person communication" (C6).</i></p>

### 3.3.2.1 Social support

Seven sub-themes (emotional support; information support; tangible support; 'how much is enough'; knowledge, experience and awareness; social inclusivity in the team; and person-centered approach) were identified forming the main theme of social support. Coaches' provision of social support was necessary for athletes to overcome the psychological impact of severe knee injury and rehabilitation. Varying forms of social support were identified, including 'emotional support' to reassure and empathise; 'informational support' to deliver guidance, advice and motivation; and 'tangible support' to provide personal and material assistance.

#### 3.3.2.1.1 Emotional support

Upon initial injury, athletes expressed negative emotions. Coaches recognised this and provided athletes with emotional support. A1 *"was a bit distraught"* when sustaining their injury, so C1 *"made sure he was okay by comforting him"*. A1 mentioned, *"It was nice to know he [the coach] cared... I could see he was worried because of the interest he showed towards me"*. This act of concern strengthened their coach-athlete relationship. During A2's rehabilitation, C2's priority was, *"to ensure the athlete is emotionally stable"*. A2 disagreed, *"I didn't have an emotional bond with my coach to help me through it [injury rehabilitation]... He could've checked-up on how I was coping"*. A2 believed, *"it [the coach-athlete relationship] would've been closer if he [the coach] showed that he cared"*.

A4 stated, *"It [the injury] was my most painful experience... it was devastating"*. Given these emotional setbacks, C4 described himself as *"a big brother to him [the athlete]"*, with the responsibility to *"regularly check-up on him and ensure he was coping"*. This was not the case for A4 as they commented, *"After my injury, we didn't really speak. I saw him [the coach] daily, but he wouldn't mention my injury rehabilitation"*. C4 admitted, *"He [the athlete] could've had more support from me"*. This lack of emotional support threatened their coach-athlete relationship. Likewise, C8 referred to themselves as *"a father-figure"*, stressing their responsibility to provide emotional support to ensure *"he [the athlete] knows he isn't alone"* (C8). A8 did not perceive sufficient emotional support from C8 as they commented, *"He [the coach] could've been more understanding and sympathetic"* (A8). While coaches may think they are being emotionally supportive, athletes may not perceive coaches to be empathic enough. This mismatch between perceived provision and receipt of emotional support jeopardised coach-athlete relationships.

### 3.3.2.1.2 Informational support

Upon initial injury, athletes were uncertain of the impact of their injury. This was especially evident amongst athletes experiencing their first severe injury, *"I was concerned and unsure because that was the first time it happened to me"* (A5). Athletes also experienced difficulties with the demands of prolonged rehabilitation, as A1 mentioned, *"rehabilitation can be taxing"*. Injured athletes were upset having *"missed out on a whole year of coaching"* (A1). Athletes wanted coaches to *"help to learn more about the sport"* (A1) by *"teaching tactics and game plans"* (A5). A3 thought, *"He [the coach] could help grow my knowledge and teach me skills"*. A1 suggested, *"He [the coach] could've given me tips, as I'm sure he has experienced players with knee injuries before"*. This warranted coaches' provision of informational support, to deliver guidance, advice, and motivation to aid athletes' coping with injury rehabilitation.

Only three coaches (C2, C5 and C8) provided injured athletes with informational support. These coaches were older, more experienced, and involved with 'A-teams'. A2 expressed, *"He [the coach] could've given me guidance on what will help me... and advice on how I should've viewed this challenge and given input into how I could achieve my goals."* A2 was confused, *"I felt there wasn't a way for me to feel about it [injury rehabilitation]"*. So, C2, *"ensured he [the athlete] knows the plan going forward in their rehabilitation"*. A2 still felt unsure of their coach's plan, *"During rehab, I thought, I don't know what I'm working towards... if he showed more effort there, then it [the coach-athlete relationship] would've been better"*. This discrepancy between apparent delivery and acceptance of informational support compromised the C2-A2 relationship.

When C5 was younger, they had a similar injury to A5. They could relate because of their shared experiences. A5 commented, *"She [the coach] had the same injury, so she knows how I'm feeling. If she didn't have the same injury, she wouldn't be able to provide advice and guidance, because she wouldn't understand"*. C5 could guide and advise A5 because they understood A5's situation, which enhanced their C5-A5 relationship.

A8 mentioned, *"You need to be mentally strong to get through rehabilitation as it's draining... Not knowing what to do was frustrating"*. C8 provided A8 with informational support, *"I don't want injured players to do nothing, so I encourage them and show them what to do while they are injured"*.

A9 mentioned,

*I want to know what his [the coach's] plans are for me. We could discuss my goals and his expectations. Especially coming from my coach, I feel I could achieve my goals more easily. I wouldn't feel like I am doing this on my own as I'd have someone to help.*

By coaches providing more informational support to advise and motivate injured athletes during rehabilitation, their coach-athlete relationships may improve.

#### 3.3.2.1.3 Tangible support

Athletes valued their coach's own investment during their rehabilitation, as the personal input from coaches reflected genuine concern and desire to help athletes cope with injury rehabilitation. The same three coaches (C2, C5 and C8) that provided informational support, were the only ones that offered tangible support.

C2 reportedly made personal efforts to, *"connect him [the athlete] to a physio to ensure he got the necessary medical care needed"*. However, A2 would have appreciated their coach organising financial aid to fund physiotherapy sessions, *"I should've asked if he [the coach] could arrange funding for physio sessions. I thought, because I'm on scholarship, it should've been done. So, because that wasn't done, that wasn't really a good thing for our relationship"*. In contrast, A9, who was also on a scholarship, received tangible support from C8, *"He [the coach] organised my knee brace which was nice of him to help out with that"* (A9). This provision of tangible support improved the C8-A9 relationship.

C5 was the only coach that *"went with her [the athlete] to the first few physio sessions to ensure everything was alright"*. This was simple for C5 as, *"She [the athlete] attended the school's physio, so it was easy"*. A5 was appreciative of this, *"It was nice to know she [the coach] cared... She is concerned and wants to see my progress. It felt like she wanted to be personally included"*. This enhanced their coach-athlete relationship, *"Our bond is closer because of it"* (A5). Other athletes would value their coach's individual presence at physiotherapy appointments, *"I would feel motivated and would look forward to rehabilitation because I would want to return to play for the coach that supported me"* (A6). A8 felt *"disconnected from their coach"* and suggested *"he [the coach] could've come a few [rehabilitation] sessions"*. Even though coaches mentioned, *"We have a physio on-site"* (C6), and *"The physio's are on campus, so it's easy to pop-in and ask how the athlete is doing"* (C8), they did not always take this opportunity to attend rehabilitation sessions and build their respective coach-athlete relationships.

C8 was the only coach that was proactive in their athletes' rehabilitation, providing them with their own personal assistance, *"I take an active role during rehabilitation, I'm hands-on with the players in the gym and on the field"* (C8). This proactive approach allowed C8 to be directly involved with injured athletes during rehabilitation, which strengthened their coach-athlete relationships.

#### 3.3.2.1.4 'How much is enough'

Coaches considered by providing injured athletes with more support, their coach-athlete relationships during rehabilitation could improve. Coaches would *"check-in with them [injured athletes]"* (C5) but admitted *"maybe I could've provided more support during their rehabilitation"* (C5). Athletes believed coaches should provide them with a greater amount and quality of support, throughout their entire rehabilitation, *"I would like them [the coach] to support me through the whole rehabilitation process"* (A6). C6 admitted, *"I wasn't proactive enough in his [the athlete's] rehab process"*. A6 reported if C6 was more proactive in their rehabilitation, *"It [the coach-athlete relationship] would be better because we would've had a stronger connection because he would've helped me during rehabilitation"* (A6).

C1 admitted, *"I could've been more supportive. I didn't do enough. But also, he [the athlete] didn't show much interest in staying close to me"* (C1). A1 had similar views as they mentioned C1 *"could've communicated more with me. But I didn't really try communicating with him either"* (A1). Both C1 and A1 did not do enough to maintain their coach-athlete relationship during rehabilitation.

C4 admitted,

*I could've been more proactive in communicating with him [the athlete] more regularly to get updates so I have a better understanding of his injury and how they are managing... The onus was on me to stay updated with his injury and rehabilitation... I could've done more.*

Likewise, C2 confessed to not being supportive enough, *"I could've been more supportive"*. Consequentially, A2 commented, *"Our relationship would've been closer if he [the coach] was more supportive"*. C2 expressed uncertainty regarding how much support they should offer injured athletes, as they questioned, *"How actively involved should coaches be in the rehabilitation process"* (C2). This ambiguity led to compromised coach-athlete relationships.

#### 3.3.2.1.5 Knowledge, experience and awareness

The extent of knowledge and awareness amongst coaches and athletes contributed towards the quality of coach-athlete relationships during rehabilitation.

In the C1-A1 relationship, both individuals were unaware of any responsibility to preserve their coach-athlete relationship during rehabilitation. A1 mentioned, *“Honestly, I didn’t think about it”*, while C1 commented, *“It didn’t cross my mind... I didn’t consider the impact I could have on his [the athlete’s] rehabilitation”*. This lack of awareness jeopardised the quality of their coach-athlete relationship.

C6 identified, *“The coach-athlete relationship is complex but very important. You [the interviewer] have made me think about things that I wasn’t previously aware”*. While some coaches appreciate the significance of maintaining coach-athlete relationships during rehabilitation, they are not always consciously aware of it. A6 perceived their coach to be unaware of them whilst injured, *“My coach doesn’t realise the hard work I put in [during rehabilitation] because he mostly cares about the team, so he doesn’t really focus on me while I’m injured”*. Likewise, A2 acknowledged C2’s lack of interest in them as they mentioned, *“The coach is more focused on the team” (A2)*. When athletes perceived coaches to be less aware of them during rehabilitation, their coach-athlete relationships were compromised. If coaches showed athletes more recognition during rehabilitation, *“It would make me [the athlete] happy and more motivated” (A6)*.

Due to a *“lack of expertise” (C3)*, inexperienced coaches struggled to comprehend the psychological demands athletes endured during injury rehabilitation because *“it’s a difficult topic to understand” (C3)*. C1 was a young, novice coach that had never coached an athlete with a severe injury before, *“I didn’t have much coaching experience, but I thought I had adequate skills to do the job” (C1)*. A1 commented, *“If he [the coach] had experience with injuries before, he would know more about my situation and would be more supportive”*. C4, another young, inexperienced coach commented, *“I didn’t know at the time”* in response to whether they recognised the potential influence their coach-athlete relationship could have on their athlete’s rehabilitation. C3 linked their lack of knowledge to *“inexperience regarding what I should do to maintain a relationship with an injured athlete during rehabilitation” (C3)*. C3 felt unprepared,

*Whether I’m qualified enough to guide someone in quite a psychological role is debatable... It’s compulsory for all rugby coaches to follow a strict protocol that is taught in ‘BokSmart’ courses for head injuries, whereas knee injuries aren’t covered, so I don’t actually know what to do.*

C3 suggested, *“because knee injuries often result in athletes being out for a long time, there should be a rehabilitation protocol for knee injuries that coaches can follow, that covers all aspects, including psychological recovery”*.

Experienced coaches may be better equipped to assist athletes during rehabilitation, and therefore better maintain coach-athlete relationships. C8, an older, more experienced coach, commented, *“because I’ve got some experience in dealing with injuries like this, it makes it [maintaining coach-athlete relationships during rehabilitation] easier”* (C8). Expert coaches who have experience in dealing with athletes with severe knee injury could guide novice coaches. C3 expressed, *“a lack of guidance from senior, more experienced coaches on how to manage athletes with severe injury”*, hindered their ability to uphold positive coach-athlete relationships. Novice coaches would welcome extra training from those with more experience, *“Short courses or presentations from coaches and players that have experienced this to share their experiences and give suggestions would really help”* (C3).

#### 3.3.2.1.6 Social inclusivity in the team

The extent of on-going team involvement affected athletes’ identity. Coaches and athletes had a responsibility to preserve coach-athlete relationships during rehabilitation, by making efforts to maintain participation in their respective teams. Injured athletes that remained included in a team, retained their self-identification as an ‘athlete’, which allowed them to maintain coach-athlete relationships. A5 mentioned,

*If I want to be included in the team, I have to show interest and be there for them [the team]. I went and supported them at every practice or match. We [the athlete and coach] have a good bond because she [the coach] included me in the team.*

Whereas when injured athletes were excluded from their team, they lost their identity, which negatively impacted on their sense of belonging and general wellbeing. This compromised their coach-athlete relationships during rehabilitation. A6 commented,

*I felt a true connection with my coach and team when I was playing. But when I got injured, I was sad I wouldn’t be part of the team... When I was in the team I was very close to my coach because he told me what to do and how to get better and we spoke in-person. But since my injury, we haven’t spoken as much ... If I was included more in the team, I would’ve felt closer to my coach.*

A1 felt *“left out and isolated from the team and coach during rehabilitation”*. Despite their injury, athletes wanted to feel part of their team and wanted their coaches to include them. C1 admitted they could have *“made him [the athlete] feel like he’s not abandoned and invited him to practices and matches to be involved in the team... We both just drifted apart from each other”*. If C1 had included A1 in the team, A1 believed, *“our [coach-athlete] relationship would’ve been better”*.

Likewise, C1 considered, *"If he [the athlete] was more invested in the team and tried to stay closer to me, our [coach-athlete] relationship would've been stronger"*.

A3 commented, *"I watch my team play while I can't, and I feel like I can't add any value to the team which is bleak"*. C3 identified this, and gave A3 responsibilities in the team, *"He gave motivational team talks during matches and was the 'waterboy' from the side lines... Because I encouraged him to be part of the team, the relationship between us stayed very strong"* (C3). Likewise, A7 stated by C7 giving them a responsibility on matchdays to *"run along the side lines and relay information to the team, it made us bond more together, which built our [coach-athlete] relationship closer"* (A7). C7 agreed, *"him [the athlete] coming to matches improved our [coach-athlete] relationship. We grew closer because of it"*.

A6 mentioned, *"I was disappointed because I worked hard to make the team... It would've been nice to still be part of the team and be involved with the game plan and tactics"*. Despite C6 encouraging A6 to remain part of the team, C6 commented, *"He [the athlete] withdrew himself a bit, because he didn't make an effort to be with the team, he watched from the side lines with his friends"*. When asked if A6 would feel closer to their coach if they remained part of the team, they mentioned, *"It would've helped me a lot and definitely improved our [coach-athlete] relationship"* (A6). C6 had similar views, *"We definitely would've had a stronger [coach-athlete] relationship if he was more involved with the team while he was injured"* (C6).

C8 mentioned, *"I keep them [A8 and A9] part of the team by inviting them to training sessions. It's especially important for these two because they are in grade 11 [juniors] and still have another year to play for me"*. A8 felt *"disconnected from my teammates and coach during rehabilitation"*. A8 felt uncomfortable to remain part of the team because they, *"didn't want to become a burden... I wasn't sure if I could sit on the bench with the team during games or not... I don't want to force myself to be there if I'm not welcome"*. This uncertainty regarding A8's participation in the team while injured, threatened the C8-A8 relationship. On the contrary, A9, who personally made an effort to remain part of the team, considered, *"Because he [the coach] can see I'm there [at practices and matches], he feels I'm not just here for myself, but I'm here for the team as well"*. This also allowed A9 an opportunity to interact with their coach, which A9 believed, *"definitely strengthened our [coach-athlete] relationship, because if I wasn't there, we wouldn't have bonded like we did"*. A8 and A9 played for the same team, under C8, however had differing roles in their team.

C8 mentioned,

*A8 was a fringe player, having only played five minutes for the team this year. When he comes back, he has to fight for his place in the team. Whereas A9 was an important player, having played most of the games this year. When he comes back, he will start for us. Because of his [A9's] role in the team, we communicated more compared to my interactions with A8.*

The C8-A9 relationship was stronger than the C8-A8 relationship, as A9 felt more comfortable to remain part of the team due to their superior role in the team.

C5 believed their C5-A5 relationship was strong because A5 religiously attended practices and matches out of their own will. A5 commented,

*She [the coach] didn't tell me to come to practices and matches. I did that on my own, because I felt I must support my team, because they are my friends, and I must try to stay close to my coach.*

This allowed them the opportunity to interact with one another, *"If she [the athlete] didn't make the effort, there would've been a gap in our [coach-athlete] relationship" (C5)*. A5 *"was still on the team's social media group, so I was included in everything which was nice"*. On the contrary, A4 was removed from their team's social media group by C4, *"It wasn't a good feeling. I felt it had settled in now that I'm not going to be part of this team anymore" (A4)*. Even though A4 attended matches, they *"felt uncomfortable being with the coach, because I didn't feel part of the team anymore" (A4)*. A4 believed, *"Our [coach-athlete] relationship would've been stronger if my coach made me feel more welcomed and included in the team, by not removing me from the [team's social media] group and encouraging me to come to practices and matches"*.

#### 3.3.2.1.7 Person-centered approach

When coaches did not holistically support injured athletes, their coach-athlete relationships were compromised. C3 communicated with A3 predominantly around their injury and rehabilitation, *"We chatted about the training he was doing, I checked in with him and asked him how it's going with his rehabilitation and what his recovery progress is" (C3)*. While A3 valued their coach's concern regarding their injury and rehabilitation, they would have appreciated more holistic interest,

*My coach only talks about my knee and rugby-related things, he didn't show any interest in my personal life. I would like my coach to talk to me about other things to show they care for me as a person and not just a rugby player.*

A person-centered approach to support during rehabilitation may enhance coach-athlete relationships. A6 commented, *“When I found out I was injured and how severe it was and how long I was out for; I was very emotional”*. C6 said, *“Our communication is more about how he [the athlete] is emotionally coping, and how he’s doing mentally. So, we don’t talk much about his injury, but more about how he is feeling with everything”*.

Coaches’ support was unbalanced between showing interest in the injury and rehabilitation process, while acknowledging other aspects of the athlete’s lives. C4 communicated with A4 *“about once or twice a week, but didn’t mention the knee. I asked him how it was going with academics and then we spoke some nonsense”* (C4). While A4 appreciated C4’s mentorship as a boarding house master, they were dissatisfied with their coach’s lack of support regarding their injury and rehabilitation, *“He [the coach] didn’t speak about my injury or how my rehabilitation was going”* (A4). A4 would have appreciated C4 following-up with them and asking about their progress,

*Knowing he [the coach] cares about my injury and actually notices me for more than just a player in his team, that would make me feel much better... If he showed interest in my injury and rehabilitation, our [coach-athlete] relationship would’ve been much closer.*

### 3.3.2.2 Multidisciplinary team

Four sub-themes (athletes’ family and friends’ roles; physiotherapists’ roles; coaches’ deflecting their roles; and coaches’ prioritisation of injured athletes) were identified forming the main theme of multidisciplinary team.

#### 3.3.2.2.1 Athletes’ family and friends’ roles

Aside from coaches, athletes relied heavily on assistance from their family and friends throughout rehabilitation. Athletes enjoyed spending time with friends during rehabilitation, as it diverted their attention away from their injury, *“just having time to get my mind off everything by spending time with my friends and chatting to them and having fun helped me a lot”* (A9). Athletes believed their family was genuinely concerned, and would always be there to provide support and advice. A5 mentioned, *“they [their family] were my main supporters”*. A2 believed, *“You have to get close to your family and ask them for advice because they are the only ones that will actually help you”*. All injured athletes had supportive families, and relied less on their coaches’ support. A1 said, *“If I didn’t have a supportive family, then I would’ve needed more support from my coach”*.

Some coaches believed including younger athletes' parents was important. C2 *"contacted his [the athlete's] mother to follow-up and say I'm aware of it [the injury] and asked if he is okay"*. However, A2 was not aware of this, *"He [the coach] didn't even speak to my mother to see if I was okay"* (A2). This led A2 to perceive C2 to be disinterested in them, compromising their C2-A2 relationship. C3 proposed,

*Scheduling regular communication with the athlete and their parent may be a good way to keep a good coach-athlete relationship, given that his [the athlete's] mother probably knows how I could help with his recovery... she [the athlete's mother] played a major role in his [the athlete's] rehabilitation.*

In contrast, C6 mentioned, *"I'm not too open to involve parents, especially at this [senior] level where most of them are pretty mature already"*.

#### 3.3.2.2.2 Physiotherapists' roles

All athletes had access to physiotherapists and had strong relationships with them during rehabilitation. Most athletes rated relationships with their physiotherapists as better than their relationships with their coaches because they *"felt closer with my physio than my coach during rehabilitation"* (A3). Athletes bonded with their physiotherapists about their injury progression and how they were coping with rehabilitation, whereas athletes spent less time with their coaches. A1 mentioned, *"I didn't really see my coach after my injury. Because I saw my physio more frequently, the relationship with my physio was better than the relationship with my coach"*. A5 was the only athlete that suggested, *"The relationship with my physio and coach are equally influential in my rehab"*. A5 spent a lot of quality time with C5, *"After physio sessions, I had time to attend practices before going home. My coach and I would chat at practices where she reassures me that I'm going to be fine"* (A5).

Athletes trusted physiotherapists' medical expertise, so they did not have to greatly depend on their coaches' support throughout rehabilitation. A8 believed, *"The physio gives the right guidance and tells you how to recover"*. A7 thought, *"She [the physiotherapist] knows about the healing process and what to do"*. C7 presumed that given A7's socioeconomic status, they would be well supported by others and therefore did not feel the need to offer A7 with additional support, *"maybe what plays a factor is he [the athlete] comes from a supportive and financially stable family. Therefore, they can get him the necessary care he needs already"* (C7). This reluctance from C7 to provide A7 with additional support led to A7 mentioning, *"The relationship with my physio is closer than with my coach"*.

Many coaches perceived physiotherapists to be well suited to provide athletes with the necessary support they desired. Coaches inherently trusted physiotherapists to handle all aspects of athletes' rehabilitation. C2 mentioned, *"I fully rely on the physiotherapist, who is objective, independent and qualified to manage medical aspects"*. A2 commented, *"He [my physio] played a big role in telling me to write down my goals and how I want to achieve them"*. The main reason for athletes feeling closer to their physio, than their coach, was because,

*I spent more time with the physio. I saw him [the physiotherapist] twice a week... he [the physiotherapist] also checked-up on me, asked if I'm okay and how I'm feeling. But the coach didn't seem to do any of it (A2).*

C2 commented, *"I am mostly invested in the team's performance. So, I get the physio to handle all medical aspects and remove myself from that environment due to the conflict of interest I may have"*. C2's reluctance to assist A2 with their rehabilitation difficulties jeopardised their coach-athlete relationship.

A6 stated,

*My coach didn't have a big influence during my rehabilitation. Only my physio was really there for me ... He [the physiotherapist] tells me everything I need to know and supported me... At the moment [during rehabilitation], my relationship with my physio is closer than it is with my coach.*

C6 considered the reason for A6 having a better relationship with their physiotherapist was,

*Because it's an injury, he [the athlete] wants to know what he can do to get back on the field, and the physio can give him those answers. Whereas I [the coach] focus more on what we do on the field. So, I think he [the athlete] sees an injury as a medical condition only, he knows he must heal and recover first before playing again and talking to the coach about rugby-related things.*

All injured athletes had supportive physiotherapists, so they were less reliant on their coaches for support. A1 stated, *"If my physio wasn't as supportive, then I would've needed more support from my coach"*.

### 3.3.2.2.3 Coaches' deflecting their roles

Coach-athlete relationships were influenced by injury prognosis and proposed RTS timelines. At school-sport level, coaches are assigned to a team for the year. Once the season is complete, athletes progress into a higher age-group, usually under a new coach.

When athletes were ruled out for the season with a severe knee injury, there was uncertainty amongst coaches regarding the extent of their continued responsibility for that athlete. C3 commented,

*I knew our timelines were strictly based on this season... Because we [the coach and athlete] both knew he wasn't going to play for the rest of the season, the emphasis on maintaining a good coach-athlete relationship wasn't there... But, if there was a chance he could play the last few games, then I would've been more involved.*

A4 believed, "He [the coach] would waste his time if he played a role during my rehabilitation, because I wasn't going to play for him again". C4 had similar views as they "wrote him [the athlete] off when I found out he [A4] wouldn't play for the rest of the season". This deflection of responsibility to continue to support injured athletes during rehabilitation compromised coach-athlete relationships.

Many coaches believed it was the support staff's responsibility to assist injured athletes, as they were better suited to offer support and had more time available to allocate towards player management issues. C2 commented,

*It's difficult for me because I need to manage coaching aspects. I'm not saying this [maintaining the coach-athlete relationship during rehabilitation] isn't a coaching aspect as player management definitely is. But, as a teacher who is a head coach, my time is limited. Also, during school, I can't deal with these issues properly. If I had more management staff, I could delegate roles to assistant coaches or the manager, to check-in with the injured athlete on behalf of the coaching group. But we don't have that luxury at school level. Maybe the manager could play a support function, because their role is quite diluted and miniscule in our set-up.*

Yet, C2 did not delegate a supportive role to the team manager and A2's support needs from their coach during rehabilitation were not met. This threatened their coach-athlete relationship, "The relationship with my coach during rehabilitation wasn't the greatest because he didn't check-up or ask if I'm alright and didn't schedule anything for me to do" (A2).

C4 deflected the responsibility to support A4 to their manager as they believed, "The manager's role is administrative and supportive. The manager should handle the off-field stuff, they should check-up on the injured athlete" (C4). C7 had opposing views as they believed, "The coach should check-up on the injured athlete, because he [the athlete] signed up for rugby that year and is part of that team for the entire season" (C7). C5 mentioned, "From a coach's viewpoint, we know an injury this severe means they are out for the season. It's difficult to focus on the team while also focussing on the injured ones".

While C5 acknowledged the challenge of allocating time towards injured athletes, they tried to prioritise A5 during their rehabilitation, which strengthened their coach-athlete relationship, *“I have a better relationship with A5 compared to some athletes I’ve trained for the whole season”* (C5). Coaches that continued to recognise their role as the athlete’s ‘coach’ are more likely to uphold coach-athlete relationships throughout rehabilitation, compared to those coaches that disregarded their coaching responsibilities when their athlete was injured.

#### 3.3.2.2.4 Coaches’ prioritisation of injured athletes

The main concern for coaches was what happened on the field during training and matches. Athletes that were fit and able to compete were prioritised above injured athletes, *“My coach cares mostly about the team’s performance. He doesn’t focus on the injured players”* (A6). Likewise, C6 mentioned, *“I’m concentrating on the on-field stuff with the players that are fit and not on what is happening off the field during rehabilitation”*. The prioritisation of the team above the injured athlete led to compromised relationships between coaches and injured athletes.

Most coaches *“were building a strong [coach-athlete] relationship while he [the athlete] was playing. But, when the injury happened, we couldn’t continue to strengthen that relationship”* (C6). Likewise, A6 commented, *“I had a good relationship with my coach while I was fit. I was very close to my coach. But since my injury, our relationship drifted apart because we haven’t been talking as much”* (A6). Prioritisation of communication within coach-athlete dyads deteriorated when athletes sustained their injuries, compromising coach-athlete relationships during rehabilitation. C8 mentioned,

*Because A8 only played five minutes before being ruled out for the year with injury, he’s desperate to play again. But he needs to learn to be patient. So, I’m relaxed with him to take some of the pressure off of him to return.*

A8 interpreted this relaxed approach from C8 as their coach being distant with them, *“When I knew I was out for the season, we [the coach and athlete] drifted apart, and the coach didn’t stay in touch with me because there wasn’t a reason for him to”* (A8). While coaches may think less communication with injured athletes relieves them of pressure to RTS, athletes may perceive this as their coaches not prioritising them. This may threaten their coach-athlete relationships during rehabilitation.

Prioritising communication within coach-athlete dyads was pivotal to maintain the strength of the relationship. C3 mentioned, *“Nothing was planned in terms of our communication. Something I’ve learnt and will do going forward, is making more effort to communicate with injured athletes more frequently and in more detail by arranging something specifically”*.

Coaches may require “A conscious reminder to keep communicating with injured athletes” (C6). Coaches suggested scheduling formal communication with injured athletes may be necessary to remind them to prioritise regular, in-depth communication to enhance coach-athlete relationships during rehabilitation.

### 3.3.2.3 Staff-scholar relationships

Three sub-themes (adult-minor considerations; part-time coaching; and communication) were identified forming the main theme of staff-scholar relationships.

#### 3.3.2.3.1 Adult-minor considerations

Coach-athlete relationships were influenced by the inherent nature of adult-minor interactions. Some schools had policies, whereby communication between teachers and scholars via social media was forbidden, unless it occurred in a group format. C2 mentioned, “I’m not allowed to message minor athletes privately on social media”. C2 found it easier to enquire about how A2 was managing through their parent, “I communicated with his [the athlete’s] mother regarding his exercises and how he’s managing with rehabilitation. I also messaged him [the athlete] on the team [social media] group”. A2 expressed,

*The [coach-athlete] relationship isn’t going well. We [the athlete and coach] can’t communicate because of a new school rule where teachers can’t message students privately over the phone, it can only be on a [social media] group... It [the coach-athlete relationship] would be better if the coach could privately message me to personally give me advice and encouragement during rehabilitation.*

Likewise, C2 agreed, “You can’t deal with these issues in a group context on social media, because players don’t want to share their feelings on that platform”. This barrier for communication between teachers, who were adults, and scholars, who were minors, compromised their coach-athlete relationships.

Occasionally, communication between athletes and coaches, who weren’t teachers, was easier. A1 could,

*Update him [the coach] on how I was doing by sending him a message over the phone, because he was an outside coach... If he [the coach] was a teacher, I wouldn’t be able to message him over the phone.*

In another dyad between a coach, who wasn't a teacher, and a minor athlete, C7 was hesitant to communicate with A7 over the phone,

*It's tricky because you need to protect yourself as a coach and a boarding house master. You don't want to interact with a kid one-on-one or message them on social media... If I wanted to communicate with him [the athlete], I can't call or text him and ask how he's doing.*

This subconscious restraint made communication within the C7-A7 dyad difficult, as A7 wanted "a check-up message to show they [the coach] are supporting me and make sure I'm fine". Coach-athlete relationships were jeopardised as a result of coaches being overly cautious when interacting with minor athletes.

Scholar athletes may be intimidated by adult coaches which could threaten their coach-athlete relationships. C8 believed, "He [A8] feels the need to impress me, but that isn't the case. He knows there's no pressure from my side on him to perform". A8 found it difficult to approach C8, "I would hesitate and be cautious before communicating with my coach because I worry about the consequences of the conversation" (A8). A8 suggested C8 could be "more friendly and less intimidating so that he would be more approachable" (A8).

#### 3.3.2.3.2 Part-time coaching

All coaches had additional commitments aside from coaching. These extra responsibilities often took preference above maintaining coach-athlete relationships during rehabilitation. C4 did not emphasise interactions with A4 because they were occupied with other commitments,

*I was busy with university, so communicating with him [A4] about their injury rehabilitation wasn't on top of my list. But, if I was just a coach and didn't have other commitments, I would've had more time to communicate with the athlete. Then maybe our [coach-athlete] relationship would've been stronger.*

C1 mentioned,

*I'm only a part-time coach, I have university for long hours every day, so I was occupied, and it [communicating with A1] wasn't on top of my mind. But at the same time, he [the athlete] didn't really show interest in communicating with me.*

A1 commented, "We weren't as close as we should've been because we didn't communicate enough. But it wasn't only him, as I didn't really make any effort to contact him either". C1 suggested the main reason for a compromised C1-A1 relationship during rehabilitation "was due to bad communication from both of us" (C1).

Athletes may find it easier to communicate more regularly with coaches that are teachers. A1 suggested, *"If he [the coach] was a teacher, I would've seen him quite a lot and we could've communicated more often which would've brought our [coach-athlete] relationship closer"*.

Coaches, that are teachers, viewed teaching as an additional commitment which took time away from coaching aspects such as emphasising injured athletes to maintain coach-athlete relationships. C2 mentioned,

*As a teacher, my time with players is limited. Although I want to communicate more with a player, I'm teaching, and I don't see them. Also, my time is limited with the team at training, so I need to make the most of every team session. So, at training I don't have time to talk to the athlete. It doesn't feel like I am making enough time, but I'm limited. I'm not a professional coach; I'm a teacher who coaches sport. In my capacity, I don't think I could allocate more time towards injured athletes.*

A2 believed because C2 was a coach and teacher, they did not have enough time to offer them,

*I don't know if he had time to communicate with me. But during school break-times I could talk to him. At training, he was focused on the team, but there were instances where he could've checked-up on me, but he didn't... If he [the coach] made more time to communicate with me, our [coach-athlete] relationship would be much better.*

A2 was critical of their own efforts to prioritise communication with C2, *"I should've made more effort to communicate with my coach. Just because he [the coach] didn't, doesn't mean it's okay for me not to"* (A2). C2 agreed with this, *"He [the athlete] didn't communicate well with me"*. While coaches struggled to prioritise injured athletes due to being occupied with other commitments, athletes also failed to initiate regular interactions with coaches which influenced coach-athlete relationships during rehabilitation.

Part-time coaches' additional work commitments may interfere with the quality of coach-athlete relationships. C8 emphasised A9 at the beginning of their rehabilitation, *"Initially, when he [A9] just started rehabilitation, I had to follow-up with him more because it's still fresh and he hadn't been injured before so didn't know what was expected of him"*. Despite these efforts from C8, A9 mentioned, *"Because he [the coach] has other jobs, he's very busy. He has a lot on his mind so balancing that out is obviously difficult. If he was just a coach, our relationship would've been better"*.

### 3.3.2.3.3 Communication

Coaches and athletes found it important to maintain regular communication with one another during rehabilitation. C1 mentioned, *“It’s important to check-in and ensure the athlete is fine”*. Athletes perceived frequent interactions with coaches as a sign of care, *“When he [the coach] was communicating with me and showing interest, I felt our [coach-athlete] relationship was growing”* (A1).

Many coaches expressed their responsibility to communicate with injured athletes throughout their rehabilitation, *“My role is to check-in, see how they [the athlete] are doing and ask how they are progressing with rehabilitation”* (C5). Some coaches, particularly those coaching younger athletes such as C1, believed they had the responsibility to initiate communication with athletes,

*I think it [initiating communication] is down to the coach because he's the adult... The coach should either initiate communication or create an environment where the athlete can communicate with them... But because neither of those took place, which I [the coach] take account for, our [coach-athlete] relationship wasn't that good.*

A few athletes believed it was their responsibility *“to let him [the coach] know I’m doing fine”* (A9) and to *“update them [the coach] on my progress”* (A8). While A6 commented, *“I don’t think I have a role to play in keeping communication with my coach during rehabilitation”*, C6 thought A6 had a responsibility to communicate with him, *“If he [the athlete] has something on his mind, he should feel the freedom to chat to me. He should feel comfortable to talk to me about his struggles”* (C6). This uncertainty regarding each member of the dyad’s roles led to poor communication, threatening their coach-athlete relationship.

The preferred method of communication varied within each dyad. C6 communicated with A6 telephonically, *“We kept in contact while he was injured. We chatted on the phone with text messages, and I checked in to see how he was doing”* (C6). C6 followed-up on how A6 was managing with their rehabilitation, through communication with the medical team, *“I tend to communicate more with the physio than with the athlete to find out how he’s doing”* (C6). A6 would have preferred more regular communication directly with C6 as *“face-to-face communication would’ve been better”* (A6). C6 struggled to communicate with A6 in-person as,

*At this school, we don’t have a boarding house, so A6 goes home after school which makes it difficult to find time to chat with him in-person. So, I need to think of different ways to improve on in-person communication.*

This mismatch regarding communication preferences within the C6-A6 dyad jeopardised their coach-athlete relationship. C6 believed, *“Instead of going through the medical staff, if we communicated directly, the relationship between us would be stronger”*.

Some coaches preferred to communicate with their injured athletes by *“giving them a quick phone call or sending them a text to check-in as it’s easy and doesn’t take much time”* (C8). Likewise, A8 found *“updating him [the coach] over the phone is easy, and if I see him in-person then he might also ask how I’m doing”*. C8 mentioned,

*Because both of them [A8 and A9] are in the boarding house, it makes communication on campus much easier because they’re always available... They [A8 and A9] generally come to practice to watch, so I get to chat to them there as well.*

Given the many forms of communication available within the C8-A8 and C8-A9 dyads, all parties could interact regularly, which enhanced their coach-athlete relationships.

C5 and A5 communicated regularly in-person at training sessions and did not interact frequently over the phone, *“I don’t speak with my coach on social media. I mostly speak to her [the coach] face-to-face at practices”* (A5). C5 mentioned, *“it [the communication] is mostly when she [the athlete] attends practices”*. Owing to this frequent, in-person communication, C5 learnt a lot about A5’s character. Since *“her [the athlete’s] personality makes it easy to invest in her”* (C5), A5 was described as *“an easy player to communicate with”* (C5). This ease of communication improved the C5-A5 relationship.

### 3.3.3 Summary of the results

A total of nine coach-athlete relationships were included from well-resourced schools. The coach-athlete dyads came from different sporting age-groups and team ranks, with the majority taking part in rugby union. All nine adolescent athletes suffered a severe knee injury, resulting in prolonged absence from sport and rehabilitation with a physiotherapist. All eight coaches were part-time coaches with diverse ages and coaching experience. Social support, multidisciplinary team, and staff-scholar relationships emerged as the three main themes, which were further divided into smaller sub-themes.

#### 3.3.3.1 Social support

Social support provided by coaches influenced coach-athlete relationships during rehabilitation. This was further impacted by the timing, amount and quality of emotional, informational and tangible support.

Coaches were unsure of how much support they should provide injured athletes with during rehabilitation. Younger, less experienced, novice coaches had insufficient knowledge regarding the psychological implications associated with severe injury and prolonged rehabilitation.

Athletes expressed a lack of coach support. Moreover, as the young athletes were experiencing a severe knee injury for the first time, they too lacked awareness regarding maintenance of coach-athlete relationships during rehabilitation. Some athletes felt coaches only concentrated on their injury, whereas others believed they only focused on factors unrelated to their injury rehabilitation struggles. Hence, athletes desired for coaches to adopt a person-centered approach to enhance coach-athlete relationships during rehabilitation.

Athletes and coaches had a responsibility to sustain participation in the team. Injured athletes that remained involved with their team, reserved their self-identification as 'athletes', allowing them to maintain coach-athlete relationships during rehabilitation. In contrast, injured athletes that were excluded from the team, lost their identity, which compromised their coach-athlete relationships during rehabilitation.

#### 3.3.3.2 Multidisciplinary team

Many coaches considered that support staff were better suited to provide support. Coaches recognised the vital role physiotherapists played during rehabilitation. Therefore, coaches did not emphasise support for injured athletes. Coach-athlete relationships were impacted by injury prognosis and RTS timelines, as coaches doubted their continued responsibility for athletes declared to be out for the season. The principal worry for coaches was what occurred on the field at training and matches. Therefore, coaches prioritised uninjured athletes and prioritisation of coach-athlete interactions deteriorated when athletes sustained an injury. Some coaches suggested scheduling regular interactions with injured athletes may assist them to prioritise preserving coach-athlete relationships during rehabilitation.

Adolescent athletes depended on their family and friends for support throughout rehabilitation. All athletes had access to physiotherapists and formed strong bonds with them. As athletes had supportive parents and physiotherapists, they were less reliant on their coaches' support.

### 3.3.3.3 Staff-scholar relationships

Coaches involved with younger athletes expressed their responsibility to initiate communication, while some coaches expected older athletes to instigate communication with them. All coaches were part-time coaches with additional commitments. This added responsibility took preference over preserving frequent coach-athlete interactions, which compromised the relationship during rehabilitation. Although coaches were occupied, athletes too failed to initiate frequent interactions with coaches.

Coach-athlete relationships were impacted by adult-minor interactions. School's communication policies to safeguard exchanges between teachers and scholars prevented regular coach-athlete interactions. Athletes and coaches deemed frequent communication during rehabilitation as vital to uphold coach-athlete relationships. When coaches and athletes did not fulfil their roles in communication, coach-athlete relationships were compromised. Communication preferences varied within each coach-athlete relationship. Some preferred the genuineness of in-person interactions, whereas other favoured the ease and efficiency of cellular communication. However, when there were mismatches in communication preferences, coach-athlete relationships were jeopardised.

## 3.4 Discussion

Our study explored the role of nine coach-athlete relationships to determine how it influenced rehabilitation following severe knee injury. The key areas to be discussed include the role of social support in coach-athlete relationships; the development of a multidisciplinary team approach; and the coach-athlete relationship within school sport. Additionally, the study limitations as well as recommendations and suggestions for future research are provided.

### 3.4.1 The role of social support in coach-athlete relationships

In our study, the quality of coach-athlete relationships during rehabilitation was influenced by coaches' provision of social support to injured athletes. This was further shaped by the timing, amount, and quality of differing social support types (emotional, informational, and tangible support).

#### 3.4.1.1 Emotional support

Athletes in our study suffered emotional challenges associated with initial injury, such as distraught, concern and devastation.

Most coaches recognised this and offered athletes comfort, empathy, and reassurance through provision of emotional support during early rehabilitation. Thus, affective coach-athlete relationships were formed as both members grew emotionally closer to each other. Our findings reflect existing research that suggests positive coach-athlete relationships are built on closeness, whereby athletes and coaches feel emotionally close to one another (Jowett & Ntoumanis, 2004). Within coach-athlete relationships, the coach's role is to provide support by assuring and comforting athletes to enhance their sporting experiences and well-being (Jowett, 2017; Vigário, Teixeira & Mendes, 2020).

It is well-documented that upon sustaining severe injury, athletes are emotionally overwhelmed as they experience a vast amount of stress (Evans & Hardy, 1995; Gilbert, Lyon & Wahl, 2015; Maurice, Kuklick & Anderson, 2017). Emotional support encompasses empathy whereby recipients feel understood (Maurice, Kuklick & Anderson, 2017), and comforted by means of reassurance to openly express their concerns (Ford, Gordon & Horsley, 1993). Hence, through coaches' provision of emotional support during initial injury, coach-athlete relationships were enhanced. However, many athletes considered that their coaches were not empathic enough for the entirety of their rehabilitation. Consequently, some athletes felt uncared for by their coaches, which undesirably affected their coach-athlete relationships throughout rehabilitation. It is known that athletes face on-going psychological difficulties throughout rehabilitation such as lowered self-confidence and perceived competency (Arvinen-Barrow, Massey & Hemmings, 2014; Deroche et al., 2007; Tracey, 2003), as well as fear of reinjury (Houston et al., 2014). Hence, the provision of on-going emotional support, throughout the entire rehabilitation process, is shown to improve athletes' psychological state and facilitate better recovery outcomes (Bianco, 2007). Affirmative coach-athlete relationships are shaped by commitment, representing mutual dedication to sustain an enduring relationship (Jowett & Ntoumanis, 2004). As the coaches in our study did not offer sufficient emotional support throughout the entire rehabilitation procedure, athletes believed their coaches were not dedicated to their long-term recovery, which compromised the commitment of their coach-athlete relationships.

#### 3.4.1.2 Informational and tangible support

In our study, athletes were uncertain concerning the impact of their injury and experienced challenges with prolonged rehabilitation and absence from sport. Hence, athletes desired motivation, guidance, and advice from coaches. Moreover, athletes valued their coach's own investment during rehabilitation as it represented genuine concern. Yet, athletes expressed a lack of informational and tangible support provided by coaches.

While some older, more experienced, 'A-team' coaches offered informational and tangible support, most athletes felt uninformed, misguided, unmotivated and personally under-supported by their coaches throughout rehabilitation. This adversely affected their coach-athlete relationships during rehabilitation. Within coach-athlete relationships, coaches should provide leadership and guidance so that athletes can learn to improve (Vigário, Teixeira & Mendes, 2020), as well as motivate athletes to enhance their self-confidence (Blom, Watson II & Spadaro, 2011; Foulds et al., 2019). Coaches' informational support is characterised by the knowledge athletes acquire relating to their injury and rehabilitation. Thus, goal setting, positive feedback and task-challenge are expressions of informational support (Bianco, 2007; Gilbert, Lyon & Wahl, 2015). Whereas coaches' tangible support reflects acts of personal and material assistance (Hardy, Burke & Crace, 1999). Podlog & Eklund (2007) found that athletes sought informational support from coaches as they progressed with rehabilitation, aiming to successfully RTS. It is well-documented that when athletes acquire a type of social support that is specifically tailored to their current needs, they produce better modified reactions to injury rehabilitation (Covassin et al., 2014; Rees et al., 2010). Hence, the correct timing of appropriate support forms is critical (Udry et al., 1997).

#### 3.4.1.3 Coaches' knowledge

Our results showed that older, experienced coaches with a greater knowledge base were better equipped to support injured athletes, whilst younger, novice coaches felt under-prepared and lacked knowledge, which compromised their ability to form constructive coach-athlete relationships during rehabilitation. Despite most coaches having a basic coaching qualification, less experienced coaches struggled to comprehend the psychological challenges athletes faced during rehabilitation. Many coach-athlete relationships suffered from superficial social interactions as many of the young coaches in our study may not have fully developed their social skills. Furthermore, novice coaches may not have been previously exposed to athletes with severe injury and its psychological consequences, which restrained them from sharing their past experiences to adequately advise injured athletes. Thus, coach-athlete relationships were constrained by coaches' lack of professional, interpersonal, and intrapersonal knowledge.

Elite coaches use their professional and interpersonal knowledge to understand the athlete's injury and what the psychological repercussions are, as well as to comprehend what injured athletes desire at certain stages in their injury rehabilitation to determine the appropriate delivery of support.

This, together with exhibiting fundamental communication skills, allows experienced coaches to provide effective support to injured athletes (Maurice, Kuklick & Anderson, 2017), through fostering close connections with athletes by attending to their intrinsic needs (Philippe & Seiler, 2006). Furthermore, expert coaches draw on their intrapersonal knowledge, through personal reflection on their own experiences with injury or previously injured athletes, to advise and support injured athletes (Maurice, Kuklick & Anderson, 2017). Hence, role modelling is suggested as a coach intervention to facilitate athlete's coping with injury (Podlog & Dionigi, 2010), yet another study shows advice from teammates that endured similar experiences with injury rehabilitation is the most informative for currently injured athletes (Ford, Gordon & Horsley, 1993). Existing research confirms that coaches' knowledge and understanding is vital in providing appropriate types of social support to injured athletes at various times during their rehabilitation (Abgarov et al., 2012; Robbins & Rosenfeld, 2001). Yet, sports coaches report having insufficient knowledge (Maurice et al., 2021), as well as a poor capacity and competence (Bon & Doupona, 2021) for knowing how and when to support athletes during their injury rehabilitation. Additionally, amateur sports coaches at SA schools express poor knowledge for sports injury psychology (Le Roux, 2010). These findings, together with our results, support the need for coaches to be trained to facilitate athlete's rehabilitation after severe injury, with the ultimate goal of restoring positive coach-athlete relationships. These coaching courses should consider including educational workshops with practical implications. Furthermore, necessary resources and funding should be allocated towards the training of school sport coaches (Duffy, 2010).

#### 3.4.1.4 Holistic, person-centered approach

The majority of athletes in our study felt their coaches could have been more supportive of them, and were thus dissatisfied with their coaches' support throughout rehabilitation. Coaches did not know how much support to provide injured athletes with. Hence, both athletes and coaches reported insufficient amounts of quality social support, which unfavourably affected their coach-athlete relationships during rehabilitation. These findings are in agreement with previous studies that highlight athletes' desire for accepting and appreciating more support from their coaches throughout their rehabilitation (Podlog & Dionigi, 2010; Robbins & Rosenfeld, 2001), as they remain unsatisfied (Corbillon, Crossman & Jamieson, 2008; Malinauskas, 2008). While one study indicates coaches' emotional support as the most important to injured athletes' wellbeing (Malinauskas, 2008), another suggests coaches' informational support to be the most influential (Clement & Shannon, 2011).

Hence, while there is still no consensus on the amount of support athletes require from coaches and which form of support is deemed the most important, coaches should strive to provide as much holistic support as possible, to improve coach-athlete relationships during rehabilitation.

Athletes in our study expressed the importance of being recognised as a 'whole person' and not just as an athlete. However, many coaches struggled to balance showing interest in athletes' lives outside of sport while focusing on their support needs during injury rehabilitation. Our findings are in agreement with existing literature as for coach-athlete relationships to be effective, a holistic approach is required, where life beyond sport is equally considered (Jowett, 2005). Furthermore, elite coaches express the importance of 'whole-person' development in constructing caring coach-athlete relationships (Fisher et al., 2017). In the context of sporting injury, young athletes highlight the positive influence of a person-centered approach on their rehabilitation (Bejar et al., 2019). Hence, to improve coach-athlete relationships during rehabilitation, a person-centered approach should be adopted.

#### 3.4.1.5 Social inclusivity

In our study, social inclusivity was a key factor which influenced the quality of coach-athlete relationships during rehabilitation. Some coaches ensured injured athletes remained socially included, which allowed athletes to maintain their self-identification as 'athletes'. By endorsing on-going participation, athlete's self-confidence and satisfaction is improved, restoring positive coach-athlete relationships (Blom, Watson II & Spadaro, 2011; Foulds et al., 2019). Self-identity is a major challenge for athletes (Burns et al., 2012), specifically during adolescence (Podlog et al., 2013). Severe injury threatens athletic identity as athletes can no longer perform fundamental athletic roles (Von Rosen et al., 2018). Since social identity is positively correlated with athlete satisfaction (Burns et al., 2012), it is proposed that coaches who attempt to retain athletes' distinctiveness as an 'athlete' uphold their fulfillment, subsequently strengthening their coach-athlete relationships. Yet, some coaches in our study inadvertently or purposefully excluded injured athletes, which caused them to feel left out by their coaches. These findings are supported by literature that demonstrates athletes may feel isolated from their coaches during rehabilitation (Evans & Hardy, 1995; Tracey, 2003), as some coaches avoid athletes with injuries to prevent favouritism or believe athletes should deal with injuries without their coaches help (Robbins & Rosenfeld, 2001; Rosenfeld, Richman & Hardy, 1989). Thus, to maintain coach-athlete relationships during rehabilitation, coaches should ensure athletes do not feel abandoned by including them in team training and events to facilitate social inclusivity (Maurice, 2019; Maurice, Kuklick & Anderson, 2017).

## 3.4.2 The development of a multidisciplinary team approach

### 3.4.2.1 Family support

In our study, all athletes received good quality support from their parents which assisted their coping with the psychological demands of injury and prolonged rehabilitation. It is suggested because coaches acknowledged that their athlete's had supportive parents, they did not emphasise support for injured athletes. This led to infrequent coach-athlete interactions, which caused a decline in the relationship. Our findings are paralleled with another study that indicates coaches distance themselves from athletes when parents are perceived to be very supportive, owing to fears of conflict that may compromise their professionalism as coaches (Jowett & Timson-Katchis, 2005). Consequently, coaches refrain from fulfilling their roles of offering leadership, guidance, and support within coach-athlete relationships (Vigário, Teixeira & Mendes, 2020). Therefore, while research demonstrates that supporting injured athletes requires multiple role players, the orchestration of support should be handled collectively (Hardy, Burke & Crace, 1999).

As athletes in our study were in regular contact with their parents and were well-supported by their families, athletes' reliance on support from their coaches was perceived to be less significant, which affected the quality of their coach-athlete relationships. Thus, our findings propose that maintaining coach-athlete relationships during rehabilitation may be less significant for scholar-athletes with strong parental support, compared to older, independent athletes living alone. Yang et al. (2010) demonstrates that before injury, family is the primary source of support for collegiate athletes. However, after sustaining an injury, athletes rely more on their coaches for support. It is proposed this may be as a result of student-athletes living away from their families for the first time. Hence, when family support is unavailable, injured athletes are more dependent on their coaches (Yang et al., 2010).

Some coaches in our study acknowledged the role of parents during younger athletes' rehabilitation, whereas others felt older athletes were mature enough to warrant excluding their parents. While coach-athlete relationships are considered the most fundamental relationship in sport (Vigário, Teixeira & Mendes, 2020), parental influences are instrumental in determining the quality of coach-athlete relationships amongst young athletes (Jowett & Timson-Katchis, 2005). Positive influences include augmenting regular coach-athlete interactions and conveying support for development of coach-athlete relationships.

Whereas negative influences include providing negative feedback owing to dissatisfaction, leading to declining coach-athlete relationships, particularly when athletes are still dependent on their parents (Jowett & Timson-Katchis, 2005). Furthermore, when younger athletes mature and transition into senior sport, the dependence on their parents regresses, while coaches' influences become more pronounced (Wylleman & Lavallee, 2004). Hence, during adolescence and youth sport, there is still a need for coaches to collaborate with parents, to sustain strong coach-athlete relationships during rehabilitation.

### 3.4.2.2 Physiotherapist's support

All athletes in our study could access and afford physiotherapy services independently. Most athletes felt closer to their physiotherapists owing to the valuable expertise they shared to guide them to successful recovery and the amount of time they spent together, which took away opportunities for coach-athlete interactions. It is widely known that injured athletes are more satisfied with support from other support staff (Bon & Doupona, 2021; Clement & Shannon, 2011; Robbins & Rosenfeld, 2001), such as physiotherapists. A possible explanation for this is athletes feeling excluded from their coaches during rehabilitation (Fernandes et al., 2014). Hence, while physiotherapists play a pivotal role during rehabilitation, they should encourage inclusion of coaches and incorporate ways to recognise and maintain coach-athlete relationships throughout rehabilitation.

Many coaches expressed that the physiotherapists were easily accessible, yet only one coach attended their athlete's physiotherapy sessions. Potentially, other coaches did not attend as they did not recognise the value in being present during their athlete's rehabilitation sessions. Athletes expressed a desire for coaches to join rehabilitation sessions to offer support and strengthen their coach-athlete relationships. Our findings agree with other studies that suggest simple acts of concern from coaches, such as attending physiotherapy sessions, may help athletes cope with their injury rehabilitation (Maurice, 2019) and facilitate stronger coach-athlete relationships during rehabilitation (Robbins & Rosenfeld, 2001).

Coaches deflected their responsibility to support injured athletes to physiotherapists, owing to their limited skillset and recognition of physiotherapists' abilities to help athletes deal with the psychological demands of severe injury and rehabilitation. Hence, physiotherapists may be ideally positioned to upskill and educate coaches to facilitate athletes' experiences with rehabilitation, through restoring positive coach-athlete relationships. Furthermore, there is a need for stronger integration of all role players during the rehabilitation process.

Athletes, coaches, physiotherapists, and parents should strive to accommodate each other by forming a collaborative multidisciplinary team approach to preserve coach-athlete relationships during rehabilitation. While coaches may be the most influential person for injured athletes (Gilbert, Lyon & Wahl, 2015; Robbins & Rosenfeld, 2001; Rosenfeld, Richman & Hardy, 1989) as strong coach-athlete relationships in sport are imperative (Vigário, Teixeira & Mendes, 2020), scholars recommend that all role players involved in athletes' rehabilitation play their part (Hardy & Crace, 1993; Robbins & Rosenfeld, 2001). Hence, Podlog & Dionigi (2010) proposes that coaches co-ordinate a 'team approach' to address injured athletes' psychological demands during rehabilitation.

### 3.4.3 The coach-athlete relationship within school sport

#### 3.4.3.1 Staff-scholar interactions

A unique, contextual factor in our study was the influence of staff-scholar interactions on coach-athlete relationships. Regular coach-athlete interactions were deemed pivotal to preserve the quality of the relationship during rehabilitation. Yet, participants reported barriers including social media messaging restraints, prohibited one-on-one interactions, and restricted communication after school. Communication preferences varied within each dyad as some favoured genuine face-to-face conversations, whereas others preferred efficient cellular communication. When communication was disrupted, through mismatches in preferences or failing to overcome barriers, coach-athlete relationships were adversely affected. Contextually, allegations against coaches suspected of inappropriate relationships with young athletes have become extremely topical, giving recent rise to global media campaigns such as #SportToo and #CoachDontTouchMe (Gaedicke et al., 2021). Furthermore, recent investigations have surfaced at high-profile sporting schools in the WC of SA, accusing teacher-coaches of assaulting (News24, 2019) and sexually abusing (Cape Town Etc., 2023; News24, 2019) scholar-athletes. While creating an environment for open communication is proposed to address injured athletes' psychological concerns during rehabilitation (Podlog & Dionigi, 2010), 'no-touch' policies and strict communication guidelines were implemented at schools in our study to protect scholars and teachers from having inappropriate relationships. This constrained their ability to form intimate coach-athlete relationships. Studies demonstrate that coach-athlete relationships built on trust, shared commitment, and empathy, yield a performance-enhancing, motivating environment (Borggreffe & Cachay, 2013; Duda & Appleton, 2016; Jowett, 2007). Strong coach-athlete relationships are therefore expressed by intimate emotional bonds and social closeness (Gaedicke et al., 2021).

Severe injury and prolonged rehabilitation may require coaches to be even more involved with athletes in an intimate, emotional capacity. Yet, literature continues to display shortfalls in coaches' support for injured athletes (Corbillon, Crossman & Jamieson, 2008; Gould et al., 1997; Udry et al., 1997). Our results propose in the case of scholar-athletes, this may be more pronounced owing to the increased awareness around child protection arising from power imbalances imbedded in staff-scholar relationships. Hence, to allow coaches, who are school staff members, and scholar-athletes opportunities to maintain their relationships during rehabilitation, alternative approaches to communication should be adopted whereby safe spaces are created to augment regular coach-athlete interactions.

#### 3.4.3.2 Length of coach-athlete relationships

Our findings reflected that the duration of coach-athlete relationships before injury influenced its quality during rehabilitation. Youth sport requires athletes to progress into new age-groups each year, while coaches may not follow this trend. Subsequently, coach-athlete relationships in school sport are often restricted to one year. However, with injury, this duration is cut even shorter to the time of the athlete's injury. Furthermore, the duration of absence from sport influenced coach-athlete relationships during rehabilitation, as most athletes were ruled out for the entire season.

When athletes sustained their injury early in the season and were ruled out for the remainder of the year, coaches contemplated their ongoing accountability for the injured athlete. Therefore, our study proposes that injury prognosis, RTS timelines and subsequent strength of existing coach-athlete relationships determines the quality of the relationship during rehabilitation. Relationship duration is considered a determinant of dyadic closeness, intimacy, and satisfaction (Aune, Buller & Aune, 1996). Commitment, the intention to sustain an enduring relationship, is an indicator of coach-athlete relationship quality (Jowett & Ntoumanis, 2004). Athletes and coaches devoted to better-established, longer-term relationships are more committed to uphold coach-athlete relationships, as the longer the relationship, the more dyadic investment (Jowett & Clark-Carter, 2006). Our findings support this notion as brief, short-term coach-athlete relationships appeared superficial as they lacked commitment from both members to sustain a dyadic relationship during rehabilitation.

### 3.4.3.3 Part-time coaches and scholar-athletes

Our study proposes that coach-athlete relationships during rehabilitation were undesirably affected by school sport being perceived more competitively than amateur sport in SA (Lombard, 2018), as athletes and coaches strived to be professional and competitive within an amateur environment. Unlike full-time, professional coaches, the coaches in our study were part-time coaches with additional commitments. Because coaches used their limited coaching time to emphasise the team's performance and were occupied with other responsibilities outside of coaching, they did not have the capacity to prioritise preservation of coach-athlete relationships with injured athletes. Elite athletes may express more meaningful support from coaches in contrast to amateur athletes (Robbins & Rosenfeld, 2001), owing to the vast availability of support services and professional coaches' use of psychological strategies to aid athlete's recovery (Podlog & Dionigi, 2010). Furthermore, amateur, teacher-coaches report heavy workloads associated with dual roles within a school, which limits their capacity to perform coaching roles (Burnett, 2020). Research shows that some coaches do not regard support for injured athletes as part of their responsibility and subsequently focus their attention on athletes that are fit to participate (Gilbert, Lyon & Wahl, 2015). Consequently, when athlete's injuries are taken trivially, coach-athlete relationships deteriorate (Abgarov et al., 2012).

All the athletes in our study were adolescents, having experienced a severe injury for the first time. Therefore, they may not have been regularly exposed to psychological difficulties associated with injury rehabilitation and not acknowledged the important function of their coach during this process. This may have compromised their ability to maintain coach-athlete relationships, as some coaches expressed a lack of communication from their injured athletes. Within coach-athlete relationships, the athlete's role is to learn and receive support (Vigário, Teixeira & Mendes, 2020) by sharing their thoughts and feelings with coaches to achieve mutual goals of satisfaction (Jowett, 2017). As the adolescent athletes in our study were still learning pivotal social skills, they may not have had the necessary life experiences to demonstrate effective communication with their coaches during this stage of their development. Nurmi (2004) supports this notion stating development of social skills is one of the many characteristics of the transitional period of adolescence. Furthermore, older, more experienced athletes require and insist on more support from their coaches, owing to them being more accustomed to injury rehabilitation (Corbillon, Crossman & Jamieson, 2008). Hence, the younger, adolescent athletes in our study may have relied less heavily on their coaches for support, owing to inexperience with injury rehabilitation, which may have unfavourably influenced their coach-athlete relationships during rehabilitation.

#### 3.4.3.4 School category

All coach-athlete relationships in our study came from public, quintile 5 schools and an independent, private school in the WC of SA. As these athletes attended well-resourced schools, they had access to support to facilitate their rehabilitation from severe injury. This included strong parental support and access to a dedicated physiotherapist. Thus, our results are likely to reflect a position of privilege. This may be considered a potential limitation of our study as the majority of SA scholars (77.2%) attend no-fee, poorly resourced quintile 1-3 schools (Ndebele, 2017). According to Williams & Parkhouse (1988), socioeconomic status may influence the quality of coach-athlete relationships. While school category is often used as a proxy measure for socioeconomic status of scholars and by extension, their families, we did not request any information from participants on socioeconomic status as part of this study. Hence, the assumption that scholars attending well-resourced schools were better able to access support to enhance their experiences with injury rehabilitation was not tested. Therefore, definitive deductions regarding the influence of socioeconomic status on coach-athlete relationships during rehabilitation cannot be drawn from our study.

### 3.4.4 Study limitations, recommendations and suggestions for future research

#### 3.4.4.1 Study limitations

A limitation of our study included a lack of diversity in the sample. While our study included coach-athlete relationships from well-resourced schools in the WC, the majority of scholars in SA attend poorly resourced schools. Therefore, the influence of school resources and socioeconomic status on coach-athlete relationships during rehabilitation cannot be drawn. However, the strength of having a non-diverse sample is that rich, novel insight is provided for a niche group which is generalisable to this particular profile of athletes and coaches. Although gender may be a determinant of coach-athlete relationships during rehabilitation, because only one female-only coach-athlete relationship was included in our study, deductions regarding gender influences cannot be made. While only English and Afrikaans speaking participants were included, our study did not explore perspectives from other ethnic groups and cultures. As young, amateur scholar-athletes and part-time, school-staff coaches formed our sample, associations to elite sport involving older, full-time professionals are incomparable. Since our study only included coach-athlete relationships from rugby union and netball, transferability of findings to individual and other team sports are not possible. Another limitation of our study was only performing once-off interviews.

This confined our inquiry to a specific stage of rehabilitation, restricting investigation of the entire rehabilitation process with reference to each phase.

#### 3.4.4.2 Clinical recommendations

While educating and upskilling coaches is suggested, formal methods should be discouraged as coaches prefer informal learning (Cushion, Armour & Jones, 2003; Erickson et al., 2008; Gilbert & Trudel, 2006; Mallett, Rossi & Tinning, 2008; Nelson, Cushion & Potrac, 2006). Therefore, we recommend that schools implement coaching mentorship programmes to ensure that less experienced, novel coaches can easily and readily interact with and learn from older, more experienced coaches. Furthermore, schools or heads of sport (as the coach's employer), should keep record of athletes with severe injury, that may be ruled out for the season, and consult with the current coach (and future coach where possible), as well as the manager, to determine an individually-tailored support network for each athlete that clearly identifies who is responsible for supporting each athlete throughout their injury recovery to preserve positive coach-athlete relationships during rehabilitation. We recommend that schools use a mediator to ensure that coach-athlete relationships are able to flourish within a safe, protective environment, so that athletes' wellbeing during rehabilitation is adequately managed.

In light of more holistic management for injured athletes, a 'team approach' is recommended whereby coaches work in harmony with athletes and their parents, to safeguard athletes' wellbeing during rehabilitation. Thus, we recommend a shift towards a triadic coach-athlete-parent relationship for young athletes (Jowett & Timson-Katchis, 2005). This can be achieved by simply keeping communication channels open between coaches, athletes and parents. A suggestion would be that coaches arrange regular group meetings, or create a group on social media, including the athlete, coach, and parent to ensure frequent, open communication between the triad to maintain the coach-athlete-parent relationship during rehabilitation. Moreover, physiotherapists can play a greater role in fostering positive coach-athlete relationships during rehabilitation by including coaches in their athletes rehabilitation. This can be achieved by physiotherapists inviting coaches to join treatment sessions that are scheduled outside of training times, providing coaches with regular updates concerning their athlete's recovery (physical and psychological status and progress) and highlighting the importance of holistic support for injured athletes to all role players (athlete, coach, parent).

#### 3.4.4.3 Suggestions for future research

Future researchers should consider a broader sample reflective of the entire demographic profile and sporting population. Prospective studies should perform follow-up interviews during various stages of rehabilitation (initial injury, strength and conditioning phase, RTS) to explore coach-athlete relationships throughout recovery from injury. Tools developed to improve coach-athlete relationships, such as the COMPASS model (Rhind & Jowett, 2010) or assess its quality using the CART-Q (Jowett & Ntoumanis, 2004) should be validated in the context of injury rehabilitation and evaluated pre- and post-intervention. Forthcoming research should explore the impact of socioeconomic status and school resources; parental and physiotherapist support; dyad gender; and ethical dilemmas associated with minors when investigating coach-athlete relationships during rehabilitation at school sport level.

## CHAPTER 4: SUMMARY AND CONCLUSION

Severe knee injury is common amongst athletes (Fuller et al., 2007), requiring extensive rehabilitation and prolonged absence from sport, including coaching mentorship. Besides physical impairment, severe injury elicits psychological impediment, additionally opposing recovery and rehabilitation (Podlog et al., 2013). The coach-athlete dyad is the most important sporting relationship, whereby coaches provide guidance and support, while athletes learn, compete, and accept support (Vigário, Teixeira & Mendes, 2020). Through mutual understanding, both role players utilise this relationship to accomplish shared goals of success and satisfaction through improved performance and wellbeing (Jowett, 2017). Coaches' influences on athletes are not only limited to sporting situations (Blom, Watson II & Spadaro, 2011), as coaches' roles during rehabilitation and how this affects athletes' psychological wellbeing, performance and RTS have been explored (King et al., 2023).

Twenty-seven articles were analysed in a scoping review to explore the coach's role during an athlete's rehabilitation from injury. Factors that may influence coaches' roles during rehabilitation included athletes' and coaches' age and gender, the type of sport and level of competition, athletes' roles in the team, and injury type and severity. The coach's main role during rehabilitation was providing social support to injured athletes. The amount and availability of social support, as well as varying forms and their significance to athletes' wellbeing, are key features of the coach's role during rehabilitation. Social support provided by coaches to injured athletes facilitated preservation of coach-athlete relationships during rehabilitation, avoiding conflict between the two upon RTS.

While coach-athlete dyads have been investigated to improve sporting performance (Vigário, Teixeira & Mendes, 2020; Wadey et al., 2018), possible influences of this relationship on rehabilitation following severe injury had not yet been unequivocally explored. Moreover, there was a scarcity of research considering coach-athlete relationships in adolescent athletes and amateur coaches. Our qualitative study aimed to explore the role of the coach-athlete relationship to determine its influences on rehabilitation following severe knee injury. Semi-structured interviews were conducted with eight coaches and nine athletes independently. The study's unique sampling criteria, involving interviews with both coaches and athletes, reflected an innovative research design that strategically addressed and built upon existing gaps in the literature. This novel approach offered a comprehensive exploration of coach-athlete relationships, as it provided diverse, holistic perspectives and experiences of both role players.

Thus, this study has positioned itself as an original and valuable extension of knowledge within the field, showcasing its potential to advance the understanding of complex coach-athlete relationships in sport.

Nine coach-athlete relationships were included from well-resourced high schools in the WC of SA. The dyads came from varying sporting age-groups and team ranks, and the majority participated in rugby union. All adolescent athletes experienced a severe knee injury, with subsequent absence from sport and prolonged rehabilitation with a physiotherapist. All coaches were part-time coaches with diverse ages and coaching experience. Three main themes (social support, multidisciplinary team, and staff-scholar interactions) emerged from the reflexive thematic analysis process which helped to address our research objectives:

- 1) To explore the psychological influences of severe knee injury on rehabilitation in adolescent athletes and their coaches

Upon initial injury, athletes suffered emotional distress. Coaches recognised this and provided athletes with emotional support. Yet, many athletes felt their coaches were not empathic enough. As the adolescent athletes had experienced their first severe injury, they were unsure of its impact and endured challenges with extensive rehabilitation. Thus, athletes valued their coach's personal investment during rehabilitation and desired guidance, advice, and motivation from their coaches. Only older, more experienced, 'A-team' coaches provided informational and tangible support, however athletes still felt unguided and personally under-supported by their coaches. Athletes felt excluded from their coaches and team during rehabilitation, leading to feelings of isolation which threatened their athletic identity. Thus, athletes and coaches described the importance of sustained involvement in the team to preserve coach-athlete relationships during rehabilitation. Athletes expressed the significance of being acknowledged as a 'whole person' and not just as an athlete. Yet, coaches struggled to balance the provision of support, while showing interest in athletes' lives outside of sport. Hence, a holistic, person-centered approach during rehabilitation may yield more affirmative coach-athlete relationships.

- 2) To explore coaches' and athletes' perspectives and understanding of their respective roles during rehabilitation

The coach's main role, within the coach-athlete relationship during rehabilitation, was to provide injured athletes with support.

While coaches attempted to fulfil their role, they struggled to understand how and when to provide support. Thus, the form, timing, amount, and quality of social support influences coach-athlete relationships during rehabilitation. Novice, inexperienced coaches struggled to offer leadership and guidance as they lacked knowledge, experience, and awareness regarding the psychological influences of severe injury and rehabilitation on athletes' wellbeing. Thus, coaches were unable to fulfil these roles within their coach-athlete dyads, which undesirably affected their relationships during rehabilitation. We recommend upskilling coaches to enhance their understanding and psychological counselling abilities to develop meaningful coach-athlete relationships during rehabilitation.

The athlete's role during rehabilitation was to follow instructions and receive support. Young, scholar-athletes may not have been frequently exposed to the psychological demands of injury rehabilitation or recognised the pivotal role of their coach. Furthermore, adolescent athletes may not have fully developed their social skills to effectively communicate with coaches. This undesirably affected their coach-athlete relationships during rehabilitation. While adolescent athletes appreciated their coaches input, they followed their physiotherapist's guidelines and cherished support from their family during rehabilitation. Thus, coaches deflected their responsibility to prioritise support for injured athletes. Therefore, stronger integration of all role players during athletes' rehabilitation is required to strive towards developing a collaborative, multidisciplinary team approach to uphold coach-athlete relationships, whereby coaches work alongside athletes and their physiotherapists and parents.

3) To describe factors that influence coach-athlete relationships during rehabilitation following severe knee injury

Staff-scholar relationship dynamics influenced coach-athlete relationships during rehabilitation as interactions between scholars and school staff were restricted. Schools should facilitate secure interactions between coaching staff and scholar-athletes to promote maintenance of strong coach-athlete relationships during rehabilitation. Length of coach-athlete relationships were determined by factors such as injury prognosis, RTS timelines and subsequent strength of existing coach-athlete relationships, which influenced the quality of the dyad during rehabilitation. Part-time, amateur, school staff coaches struggled to emphasise coach-athlete relationships during rehabilitation, owing to additional commitments and using their limited time to prioritise the team's performance.

Forthcoming research should consider large, diverse samples. Follow-up interviews during distinct rehabilitation stages is warranted, as well as inquiry before and after injury to evaluate effectiveness of interventions on coach-athlete relationships during rehabilitation. Instruments developed to enhance coach-athlete relationships or evaluate its efficacy should be assessed within the scope of injury rehabilitation.

Coach-athlete researchers should consider the following factors and their influences during adolescent's rehabilitation following severe injury: gender differences, socioeconomic status, resource availability, access to family and medical practitioner support, and ethical predicaments associated with minors. In conclusion, the quality of the coach-athlete relationship may influence rehabilitation by improving coaches' and athletes' experiences with severe injury, enhancing wellbeing, and facilitating a smooth recovery and transition into RTS.

## REFERENCES

1. Abgarov, A., Jeffery-Tosoni, S., Baker, J. & Fraser-Thomas, J. 2012. Understanding social support throughout the injury process among interuniversity swimmers. *Journal of Intercollegiate Sport*. 5(2):213-229. <https://doi.org/10.1123/jis.5.2.213>
2. Adams, W.C. 2015. Conducting semi-structured interviews. In *Handbook of practical program evaluation*. K.E Newcomer, H.P Hatry & J.S Wholey, Eds. United States of America, NJ: John Wiley & Sons, Inc. 492-505.
3. Ardern, C.L., Glasgow, P., Schneiders, A., Witvrouw, E., Clarsen, B., Cools, A., Gojanovic, B., Griffin, S., Khan, K.M., Moksnes, H. & Mutch, S.A. 2016. 2016 Consensus statement on return to sport from the first world congress in sports physical therapy, Bern. *British Journal of Sports Medicine*. 50(14):853-864. <http://dx.doi.org/10.1136/bjsports-2016-096278>
4. Ardern, C.L., Webster, K.E., Taylor, N.F. & Feller, J.A. 2011. Return to the preinjury level of competitive sport after anterior cruciate ligament reconstruction surgery: two-thirds of patients have not returned by 12 months after surgery. *American Journal of Sports Medicine*. 39(3):538-543. [DOI:10.1177/0363546510384798](https://doi.org/10.1177/0363546510384798)
5. Arvinen-Barrow, M. & Clement, D. 2015. A preliminary investigation into athletic trainers' views and experiences of a multidisciplinary team approach to sports injury rehabilitation. *Athletic Training & Sports Health Care*. 7(3):97-107. <https://doi.org/10.3928/19425864-20150422-05>
6. Arvinen-Barrow, M., Massey, W.V. & Hemmings, B. 2014. Role of sport medicine professionals in addressing psychosocial aspects of sport-injury rehabilitation: professional athletes' views. *Journal of Athletic Training*. 49(6):764-772. <https://doi.org/10.4085/1062-6050-49.3.44>
7. Aune, K.S., Buller, D.B. & Aune, R.K. 1996. Display rule development in romantic relationships: emotion management and perceived appropriateness of emotions across relationship stages. *Human Communication Research*. 23(1):115-145. <https://psycnet.apa.org/doi/10.1111/j.1468-2958.1996.tb00389.x>
8. Bejar, M.P., Raabe, J., Zakrajsek, R.A., Fisher, L.A. & Clement, D. 2019. Athletic trainers' influence on national collegiate athletic association division I athletes' basic psychological needs during sport injury rehabilitation. *Journal of Athletic Training*. 54(3):245-254. <https://doi.org/10.4085/1062-6050-112-18>
9. Bianco, T. 2007. Sport injury and the need for coach support. In *Psychological bases of sport injuries*. D. Pargman, Ed. Morgantown, WV: Fitness Information Technology. 237-266.

10. Blom, L.C., Watson II, J.C. & Spadaro, N. 2011. The impact of a coaching intervention on the coach-athlete dyad and athlete sport experience. *Athletic Insight Journal*. 2(3):187-203.
11. Bon, M. & Doupona, M. 2021. Occupational specifics of elite female handball players in relation to injury recovery, social support and environmental factors. *International Journal of Occupational Medicine and Environmental Health*. 34(1):101-110.  
<https://doi.org/10.13075/ijomeh.1896.01633>
12. Borg, A.F., Falzon, R. & Muscat, A. 2021. Psychological implications and rehabilitation programmes due to football-related injuries. *Counselling and Psychotherapy Research*. 21(4):882-898. <https://doi.org/10.1002/capr.12444>
13. Borggreffe, C. & Cachay, K. 2013. Communicative challenges of coaches in an elite-level sports system. Theoretical reflections on successful coaching strategies. *European Journal of Sport and Society*. 10:7-29. doi:10.1080/16138171.2013.11687908
14. Borque, K.A., Jones, M., Cohen, M., Johnson, D. & Williams, A. 2021. Evidence-based rationale for treatment of meniscal lesions in athletes. *Knee Surgery, Sports Traumatology, Arthroscopy*. 30(5):1511-1519. <https://doi.org/10.1007/s00167-021-06694-6>
15. Boyatzis, R.E. 1998. Transforming qualitative information, In *Thematic analysis and code development*. Thousand Oaks, CA: Sage.
16. Braun, V. & Clarke, V. 2012. Thematic analysis. In *APA handbook of research methods in psychology, Vol 2. Research designs: Quantitative, qualitative, neuropsychological, and biological*. H. Cooper, P.M. Camic, D.L. Long, A.T Panter, D. Rindskopf & K.J. Sher, Eds. American Psychological Association. 55-71.
17. Braun, V. & Clarke, V. 2019. Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*. 11(4):589-597. <https://doi.org/10.1080/2159676X.2019.1628806>
18. Braun, V. & Clarke, V. 2020. One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*. 18(3):328-352.  
<https://doi.org/10.1080/14780887.2020.1769238>
19. Braun, V. & Clarke, V. 2022. Conceptual and design thinking for thematic analysis. *Qualitative Psychology*. 9(1):3-26. <https://psycnet.apa.org/doi/10.1037/qup0000196>
20. Braun, V., Clarke, V. & Weate, P. 2016. Using thematic analysis in sport and exercise research. In *Routledge handbook of qualitative research in sport and exercise*. B. Smith & A.C Sparkes, Eds. London: Routledge. 191-205.
21. Burcu, A. 2000. A comparison of two data collecting methods: interviews and questionnaires. *Hacettepe University Journal of Education*. 18:1-10.

22. Burnett, C. 2020. Key findings of a national study on school sport and physical education in South African public schools. *South African Journal for Research in Sport, Physical Education and Recreation*. 42(3):43-60. <https://hdl.handle.net/10520/ejc-sport-v42-n3-a4>
23. Burns, G.N., Jasinski, D., Dunn, S.C. & Fletcher, D. 2012. Athlete identity and athlete satisfaction: The nonconformity of exclusivity. *Personality and Individual Differences*. 52(3):280-284. <https://doi.org/10.1016/j.paid.2011.10.020>
24. Byrne, D. 2021. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*. 56:1391–1412. <https://doi.org/10.1007/s11135-021-01182-y>
25. Cape Town Etc. 2023. *Former coach at elite Cape Town boys' school faces sex offence charges*. Available:<https://www.capetownetc.com/activism/former-coach-at-elite-cape-town-boys-school-faces-sex-offence-charges/> [2023, August 15].
26. Carson, F. & Polman, R. 2008. ACL injury rehabilitation: A psychological case study of a professional rugby union player. *Journal of Clinical Sport Psychology*. 2(1):71-90. [DOI:10.1123/jcsp.2.1.71](https://doi.org/10.1123/jcsp.2.1.71)
27. Carson, F. & Polman, R. 2010. Facilitating the psychological rehabilitation from ACL injury. In *Anterior cruciate ligament (ACL): causes of injury, adverse effects, and treatment options*. C.R. Yeager, Ed. United States of America: Nova Science Publishers. 1-26.
28. Carson, F. & Polman, R. 2012. Experiences of professional rugby union players returning to competition following anterior cruciate ligament reconstruction. *Physical Therapy in Sport*. 13(1):35-40. [DOI:10.1016/j.ptsp.2010.10.007](https://doi.org/10.1016/j.ptsp.2010.10.007)
29. Chan, D.K.C., Hagger, M.S. & Spray, C.M. 2011. Treatment motivation for rehabilitation after a sport injury: application of the trans-contextual model. *Psychology of Sport and Exercise*. 12(2):83-92. <https://doi.org/10.1016/j.psychsport.2010.08.005>
30. Christakou, A. & Lavalley, D. 2009. Rehabilitation from sports injuries: from theory to practice. *Perspectives in Public Health*. 129(3):120-126. <https://doi.org/10.1177/1466424008094802>
31. Clement, D. & Shannon, V.R. 2011. Injured athletes' perceptions about social support. *Journal of Sport Rehabilitation*. 20(4):457-470. <https://doi.org/10.1123/jsr.20.4.457>
32. Corbillon, F., Crossman, J. & Jamieson, J. 2008. Injured athletes' perceptions of the social support provided by their coaches and teammates during rehabilitation. *Journal of Sport Behavior*. 31(2):93-107.

33. Covassin, T., Crutcher, B., Bleecker, A., Heiden, E.O., Dailey, A. & Yang, J. 2014. Postinjury anxiety and social support among collegiate athletes: A comparison between orthopaedic injuries and concussions. *Journal of Athletic Training*. 49(4):462-468.  
<https://doi.org/10.4085/1062-6059-49.2.03>
34. Cushion, C.J., Armour, K.M. & Jones, R.L. 2003. Coach education and continuing professional development: Experience and learning to coach. *Quest*. 55(3):215-230.  
<https://doi.org/10.1080/00336297.2003.10491800>
35. D'Astous, E., Podlog, L., Burns, R., Newton, M. & Fawver, B. 2020. Perceived competence, achievement goals, and return-to-sport outcomes: A mediation analysis. *International Journal of Environmental Research and Public Health*. 17(9):2980-2995.  
<https://doi.org/10.3390/ijerph17092980>
36. DeJonckheere, M. & Vaughn, L.M. 2019. Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health*. 7(2):1-8.  
<https://doi.org/10.1136%2Ffmch-2018-000057>
37. Deroche, T., Stephan, Y., Brewer, B.W. & Le Scanff, C. 2007. Predictors of perceived susceptibility to sport-related injury. *Personality and Individual Differences*. 43(8):2218-2228.  
<https://doi.org/10.1016/j.paid.2007.06.031>
38. Dhillon, H., Dhillon, S. & Dhillon, M.S. 2017. Current concepts in sports injury rehabilitation. *Indian Journal of Orthopaedics*. 51(5):529-536. <https://doi.org/10.4103/ortho.IJOrtho.226.17>
39. Draper, C.E. 2009. Role of qualitative research in exercise science and sports medicine. *South African Journal of Sports Medicine*. 21(1):27-28.
40. Duda, J.L. & Appleton, P.R. 2016. Empowering and disempowering coaching climates: conceptualization, measurement considerations, and intervention implications. In *Sport and exercise psychology research: from theory to practice*. M. Raab, P. Wylleman, R. Seiler, A-M. Elbe & A. Hatzigeorgiadis, Eds. London: Elsevier. 373-388. doi:10.1016/B978-0-12-803634-1.00017-0
41. Duffy, P. 2010. South African coaching framework: scoping report. *UK Sport*. 1-40.  
<https://eprints.leedsbeckett.ac.uk/id/eprint/599/>
42. Erickson, K., Bruner, M.W., MacDonald, D.J. & Côté, J. 2008. Gaining insight into actual and preferred sources of coaching knowledge. *International Journal of Sports Science & Coaching*. 3(4):527-538. <https://doi.org/10.1260/174795408787186468>
43. Etikan, I., Musa, S.A. & Alkassim, R.S. 2016. Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*. 5(1):1-4.  
doi:10.11648/j.ajtas.20160501.11

44. Evans, L. & Hardy, L. 1995. Sport injury and grief responses: A review. *Journal of Sport and Exercise Psychology*. 17(3):227-245. <https://doi.org/10.1123/jsep.17.3.227>
45. Fernandes, H.M., Machado Reis, V., Vilaça-Alves, J., Saavedra, F., Aidar, F.J. & Brustad, R. 2014. Social support and sport injury recovery: An overview of empirical findings and practical implications. *Journal of Sport Psychology*. 23(2):445-449.
46. Fisher, L.A., Bejar, M.P., Larsen, L.K., Fynes, J.M. & Gearity, B.T. 2017. Caring in US national collegiate athletic association division I sport: The perspectives of 18 female and male head coaches. *International Journal of Sports Science & Coaching*. 12(1):75-91. <https://doi.org/10.1177/1747954116684388>
47. Ford, I., Gordon, S. & Horsley, C. 1993. Social support for injured athletes: the perspective of elite coaches. *Sports Coach*. 4:12-18.
48. Foulds, S.J., Hoffmann, S.M., Hinck, K. & Carson, F. 2019. The coach-athlete relationship in strength and conditioning: high performance athletes' perceptions. *Sports*. 7(12):244-255. [DOI:10.3390/sports7120244](https://doi.org/10.3390/sports7120244)
49. Frontera, W.R. 2003. Epidemiology of sports injuries: implications for rehabilitation. *Rehabilitation of Sports Injuries: Scientific Basis*. 3-9. [DOI:10.1002/9780470757178](https://doi.org/10.1002/9780470757178)
50. Fuller, C.W., Molloy, M.G., Bagate, C., Bahr, R., Brooks, J.H., Donson, H., Kemp, S.P., McCrory, P., McIntosh, A.S., Meeuwisse, W.H. & Quarrie, K.L. 2007. Consensus statement on injury definitions and data collection procedures for studies of injuries in rugby union. *British Journal of Sports Medicine*. 41(5):328-331. <http://dx.doi.org/10.1136/bjism.2006.033282>
51. Gaedicke, S., Schäfer, A., Hoffmann, B., Ohlert, J., Allroggen, M., Hartmann-Tews, I. & Rulofs, B. 2021. Sexual violence and the coach-athlete relationship - A scoping review from sport sociological and sport psychological perspectives. *Frontiers in Sports and Active Living*. 3:1-19. <https://doi.org/10.3389/fspor.2021.643707>
52. Gale, N.K., Heath, G., Cameron, E., Rashid, S. & Redwood, S. 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*. 13(1):1-8. <https://doi.org/10.1186/1471-2288-13-117>
53. Gilbert, J.N., Lyon, H. & Wahl, M.T. 2015. Coping with the stress of athletic injury: how coaches can help. *Strategies*. 28(4):33-39. <https://doi.org/10.1080/08924562.2015.1044147>
54. Gilbert, W. & Trudel, P. 2006. The coach as a reflective practitioner. In *The sports coach as educator: Reconceptualising sports coaching*. RL Jones, Ed. London: Routledge. 113-127.
55. Glaser, B. & Strauss, A. 2017. Discovery of grounded theory: strategies for qualitative research. *Routledge*. 1-18. <https://doi.org/10.4324/9780203793206>

56. Gould, D., Bridges, D., Udry, E. & Beck, L. 1997. Stress sources encountered when rehabilitating from season-ending ski injuries. *The Sport Psychologist*. 11(4):361-378.  
<https://doi.org/10.1123/tsp.11.4.361>
57. Gouttebauge, V., Aoki, H. & Kerkhoffs, G.M. 2018. Knee osteoarthritis in professional football is related to severe knee injury and knee surgery. *Injury Epidemiology*. 5(1):1-9.  
<https://doi.org/10.1186/s40621-018-0157-8>
58. Grindstaff, J.S., Wisberg, C.A. & Ross, J.R. 2010. Collegiate athletes' experience of the meaning of sport injury: A phenomenological investigation. *Perspectives in Public Health*. 130(3):127-135.  
<https://doi.org/10.1177%2F1757913909360459>
59. Hallquist, C., Fitzgerald, U.T. & Alricsson, M. 2016. Responsibility for child and adolescent's psychosocial support associated with severe sports injuries. *Journal of Exercise Rehabilitation*. 12(6):589-597. <https://doi.org/10.12965%2Fjer.1632814.407>
60. Hammer, E., Brooks, M.A., Hetzel, S., Arakkal, A. & Comstock, R.D. 2020. Epidemiology of injuries sustained in boys' high school contact and collision sports, 2008-2009 through 2012-2013. *Orthopaedic Journal of Sports Medicine*. 8(2):1-8.  
<https://doi.org/10.1177/2325967120903699>
61. Hardy, C.J., Burke, K.L. & Crace, R.K. 1999. Social support and injury: A framework for social support-based interventions with injured athletes. In *Psychological bases of sport injuries*. D. Pargman, Ed. Morgantown, WV: Fitness Information Technology. 175-198.
62. Hardy, C.J. & Crace, R.K. 1993. The dimensions of social support when dealing with sport injuries. In *Psychological bases of sport injuries*. D. Pargman, Ed. Morgantown, WV: Fitness Information Technology. 121-144.
63. Henry, P. 2015. Rigor in qualitative research: promoting quality in social science research. *Research Journal of Recent Sciences*. 4:25-28.
64. Hildingsson, M., Fitzgerald, U.T. & Alricsson, M. 2018. Perceived motivational factors for female football players during rehabilitation after sports injury—A qualitative interview study. *Journal of Exercise Rehabilitation*. 14(2):199-206. <https://doi.org/10.12965%2Fjer.1836030.015>
65. Houston, M.N., Cross, K.M., Saliba, S.A. & Hertel, J. 2014. Injury-related fear in acutely injured interscholastic and intercollegiate athletes. *Athletic Training & Sports Health Care*. 6(1):15-23.  
<https://doi.org/10.3928/19425864-20131120-01>
66. Independent Schools Association of Southern Africa. 2022. *Overview of independent schools*. Available: <https://www.isasa.org/overview-of-independent-schools/> [2023, August 23].

67. Iñigo, M.M., Podlog, L. & Hall, M.S. 2015. Why do athletes remain committed to sport after severe injury? An examination of the sport commitment model. *The Sport Psychologist*. 29(2):143-155. <https://doi.org/10.1123/tsp.2014-0086>
68. Jowett, S. 2005. The coach-athlete partnership. *The Psychologist*. 18(7):412-415.
69. Jowett, S. 2007. Interdependence analysis and the 3+1Cs in the coach–athlete relationship. In *Social psychology in sport*. S. Jowett & D. Lavallee, Eds. Champaign, IL: Human Kinetics. 15-27. doi:10.5040/9781492595878.ch-002
70. Jowett, S. 2017. Coaching effectiveness: the coach-athlete relationship at its heart. *Current Opinion in Psychology*. 16:154-158. [DOI:10.1016/j.copsyc.2017.05.006](https://doi.org/10.1016/j.copsyc.2017.05.006)
71. Jowett, S. & Clark-Carter, D. 2006. Perceptions of empathic accuracy and assumed similarity in the coach-athlete relationship. *British Journal of Social Psychology*. 45(3):617-637. <https://doi.org/10.1348/014466605X58609>
72. Jowett, S. & Ntoumanis, N. 2004. The coach-athlete relationship questionnaire (CART-Q): development and initial validation. *Scandinavian Journal of Medicine & Science in Sports*. 14(4):245-257. <https://doi.org/10.1111/j.1600-0838.2003.00338.x>
73. Jowett, S. & Timson-Katchis, M. 2005. Social networks in sport: parental influence on the coach-athlete relationship. *Sport Psychologist*. 19(3):267-287. <https://doi.org/10.1123/tsp.19.3.267>
74. King, J., Burgess, T.L., Hendricks, C. & Carson, F. 2023. The coach's role during an athlete's rehabilitation following sports injury: A scoping review. *International Journal of Sports Science & Coaching*. 18(3):928-944. <https://doi.org/10.1177/17479541221150694>
75. Kunnen, M., Dionigi, R.A., Litchfield, C. & Moreland, A. 2021. Psychological barriers negotiated by athletes returning to soccer (football) after anterior cruciate ligament reconstructive surgery. *Annals of Leisure Research*. 1-22. <https://doi.org/10.1080/11745398.2021.2010224>
76. Lambert, V.A. & Lambert, C.E. 2012. Qualitative descriptive research: An acceptable design. *Pacific Rim International Journal of Nursing Research*. 16(4):255-256.
77. Le Roux, K. 2010. The importance of sport psychology in school sport. *African Journal for Physical, Health Education, Recreation & Dance*. 16(3):433-446. <https://hdl.handle.net/10520/EJC19645>
78. Lincoln, Y.S. 1995. Emerging criteria for quality in qualitative and interpretive research. *Qualitative Inquiry*. 1(3):275-289. <https://doi.org/10.1177/107780049500100301>
79. Lombard, W. 2018. Building a robust athlete in the South African high school sports system. *South African Journal of Sports Medicine*. 30(1):1-3. <http://dx.doi.org/10.17159/2078-516x/2018/v30i1a2933>

80. Malinauskas, R. 2008. College athletes' perceptions of social support provided by their coach before injury and after it. *Journal of Sports Medicine and Physical Fitness*. 48(1):107-112.
81. Mallett, C., Rossi, A. & Tinning, R., 2008. Relational interdependence between individual agency and affordances in how high performance coaches learn. *AIESEP World Congress*. 1-3.
82. Malterud, K., Siersma, V.D. & Guassora, A.D. 2016. Sample size in qualitative interview studies: guided by information power. *Qualitative Health Research*. 26(13):1753–1760. <https://doi.org/10.1177/1049732315617444>
83. Mannan, S. 2020. Best practices of semi-structured interview method. *Chittagong Port Authority*. 1-12.
84. Maurice, S. 2019. Supporting the injured athlete: coaches' perspectives on providing social support. *Graduate Theses, Dissertations, and Problem Reports*. 1-103.
85. Maurice, S., Kuklick, C. & Anderson, M. 2017. Providing social support to injured athletes: applications of the international sport coaching framework. *International Journal of Physical Education, Sports and Health*. 4(5):166-175.
86. Maurice, S., Voelker, D.K., Kuklick, C. & Byrd, M. 2021. "We don't always get it right": coaches' perspectives on supporting injured athletes. *Sports Coaching Review*. 10(3):295-324. <https://doi.org/10.1080/21640629.2021.1897244>
87. Mays, N. & Pope, C. 2000. Assessing quality in qualitative research. *British Medical Journal*. 320(7226):50-52. <https://doi.org/10.1136/bmj.320.7226.50>
88. Moses, B., Orchard, J. & Orchard, J. 2012. Systematic review: annual incidence of ACL injury and surgery in various populations. *Research in Sports Medicine*. 20(3-4):157-179. [DOI:10.1080/15438627.2012.680633](https://doi.org/10.1080/15438627.2012.680633)
89. Munn, Z., Pollock, D., Khalil, H., Alexander, L., McInerney, P., Godfrey, C.M., Peters, M. & Tricco, A.C. 2022. What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. *JBI Evidence Synthesis*. 20(4):950-952. <https://doi.org/10.11124/JBIES-21-00483>
90. Ndebele, T. 2017. "Education." In *South Africa survey 2017*. F. Cronje & T. Ndebele, Eds. Johannesburg: South African Institute of Race Relations. 459-580.
91. Nelson, L.J., Cushion, C.J. & Potrac, P. 2006. Formal, nonformal and informal coach learning: A holistic conceptualisation. *International Journal of Sports Science & Coaching*. 1(3):247-259. <https://doi.org/10.1260/174795406778604627>

92. Newman, N.D. & Weiss, W.M. 2018. Relationship between demographic variables and collegiate athletes' perceptions of social support from head coaches. *International Journal of Sports Science & Coaching*. 13(3):343-348. <https://doi.org/10.1177%2F1747954117737985>
93. News24. 2019. *Bishops probe into teacher sex claims begins as more details emerge*. Available:<https://www.news24.com/news24/bishops-probe-into-teacher-sexual-misconduct-begins-as-more-details-emerge-20191019> [2023, August 15].
94. News24. 2019. *Corporal punishment claims rock Paarl Boys' High School*. Available:<https://www.news24.com/news24/exclusive-corporal-punishment-claims-rock-paarl-boys-high-school-20190307> [2023, August 15].
95. Nowell, L.S., Norris, J.M., White, D.E. & Moules, N.J. 2017. Thematic analysis: striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*. 16(1):1-13.
96. Nurmi, J.E. 2004. Socialization and self-development: channeling, selection, adjustment and reflection. In *Handbook of adolescent psychology*. R. Lerner & L. Steinberg, Eds. New York, NY: Wiley. 85-124.
97. Philippe, R.A. & Seiler, R. 2006. Closeness, co-orientation and complementarity in coach–athlete relationships: what male swimmers say about their male coaches. *Psychology of Sport and Exercise*. 7(2):159-171. <https://doi.org/10.1016/j.psychsport.2005.08.004>
98. Phillips, C.R. 2017. An evaluation of the effects of the coach-athlete relationship on athlete mental health. *UNLV Theses, Dissertations, Professional Papers and Capstones*. 1-53. [DOI:10.34917/11156789](https://doi.org/10.34917/11156789)
99. Podlog, L., Banham, S.M., Wadey, R. & Hannon, J.C. 2015. Psychological readiness to return to competitive sport following injury: A qualitative study. *The Sport Psychologist*. 29(1):1-14. <https://doi.org/10.1123/tsp.2014-0063>
100. Podlog, L. & Dionigi, R. 2010. Coach strategies for addressing psychosocial challenges during the return to sport from injury. *Journal of Sports Sciences*. 28(11):1197-1208. <https://doi.org/10.1080/02640414.2010.487873>
101. Podlog, L. & Eklund, R.C. 2007. Professional coaches' perspectives on the return to sport following serious injury. *Journal of Applied Sport Psychology*. 19(2):207-225. <https://doi.org/10.1080/10413200701188951>
102. Podlog, L., Heil, J. & Schulte, S. 2014. Psychosocial factors in sports injury rehabilitation and return to play. *Physical Medicine and Rehabilitation Clinics*. 25(4):915-930. <https://doi.org/10.1016/j.pmr.2014.06.011>

103. Podlog, L., Lochbaum, M. & Stevens, T. 2010. Need satisfaction, well-being, and perceived return-to-sport outcomes among injured athletes. *Journal of Applied Sport Psychology*. 22(2):167-182. <https://doi.org/10.1080/10413201003664665>
104. Podlog, L., Wadey, R., Stark, A., Lochbaum, M., Hannon, J. & Newton, M. 2013. An adolescent perspective on injury recovery and the return to sport. *Psychology of Sport and Exercise*. 14(4):437-446. [DOI:10.1016/j.psychsport.2012.12.005](https://doi.org/10.1016/j.psychsport.2012.12.005)
105. Pope, C., Ziebland, S. & Mays, N. 2000. Analysing qualitative data. *British Medical Journal*. 320(7227):114-116. <https://doi.org/10.1136/bmj.320.7227.114>
106. Randell, E., Jerdén, L., Öhman, A., Starrin, B. & Flacking, R. 2016. Tough, sensitive and sincere: how adolescent boys manage masculinities and emotions. *International Journal of Adolescence and Youth*. 21(4):486-498. [DOI:10.1080/02673843.2015.1106414](https://doi.org/10.1080/02673843.2015.1106414).
107. Rees, T., Mitchell, I., Evans, L. & Hardy, L. 2010. Stressors, social support and psychological responses to sport injury in high-and low-performance standard participants. *Psychology of Sport and Exercise*. 11(6):505-512. <https://doi.org/10.1016/j.psychsport.2010.07.002>
108. Rhind, D.J. & Jowett, S. 2010. Relationship maintenance strategies in the coach-athlete relationship: The development of the COMPASS model. *Journal of Applied Sport Psychology*. 22(1):106-121. <https://doi.org/10.1080/10413200903474472>
109. Robbins, J.E. & Rosenfeld, L.B. 2001. Athletes' perceptions of social support provided by their head coach, assistant coach, and athletic trainer, pre-injury and during rehabilitation. *Journal of Sport Behavior*. 24(3):277-290.
110. Rosenfeld, L.B., Richman, J.M. & Hardy, C.J. 1989. Examining social support networks among athletes: description and relationship to stress. *The Sport Psychologist*. 3(1):23-33. <https://doi.org/10.1123/tsp.3.1.23>
111. Ruddock-Hudson, M., O'Halloran, P. & Murphy, G. 2012. Exploring psychological reactions to injury in the Australian football league (AFL). *Journal of Applied Sport Psychology*. 24(4):375-390. <https://doi.org/10.1080/10413200.2011.654172>
112. Ruddock-Hudson, M., O'Halloran, P. & Murphy, G. 2014. The psychological impact of long-term injury on Australian football league players. *Journal of Applied Sport Psychology*. 26(4):377-394. <https://doi.org/10.1080/10413200.2014.897269>
113. Salignac, F. 2012. Discourse analysis. In *Handbook of Research Methods on Social Entrepreneurship*. RG Seymour, Ed. United Kingdom, Cheltenham: Edward Elgar. 127-150.
114. Sawyerr, A. 2004. African universities and the challenge of research capacity development. *Journal of Higher Education in Africa*. 2(1):213-242. <https://www.jstor.org/stable/24486132>

115. Schwarzer, R. & Knoll, N. 2007. Functional roles of social support within the stress and coping process: A theoretical and empirical overview. *International Journal of Psychology*. 42(4):243-252. <https://doi.org/10.1080/00207590701396641>
116. Schwarzer, R., Knoll, N. & Rieckmann, N. 2004. Social support. In *Introduction to health psychology*. A. Kaptein & J. Weinman, Eds. Oxford, England: Blackwell. 158-181.
117. Sen, B. 2004. Adolescent propensity for depressed mood and help seeking: race and gender differences. *Journal of Mental Health Policy and Economics*. 7(3):133-145.
118. Shumaker, S.A. & Brownell, A. 1984. Toward a theory of social support: closing conceptual gaps. *Journal of Social Issues*. 40(4):11-36. <https://doi.org/10.1111/j.1540-4560.1984.tb01105.x>
119. Slade, S.C., Patel, S., Underwood, M. & Keating, J.L. 2018. Rigorous qualitative research in sports, exercise and musculoskeletal medicine journals is important and relevant. *British Journal of Sports Medicine*. 52:1409-1410. <http://dx.doi.org/10.1136/bjsports-2017-097833>
120. Smith, R.E., Smoll, E.L. & Ptacek J.T. 1990. Conjunctive moderator variables in vulnerability and resilience research: life stress, social support and coping skills, and adolescent sport injuries. *Journal of Personality and Social Psychology*. 58:360-370. <https://psycnet.apa.org/doi/10.1037/0022-3514.58.2.360>
121. Staff, H.R., Didymus, F.F. & Backhouse, S.H. 2020. Dyadic coping in coach-athlete relationships: A grounded theory. *Psychology of Sport and Exercise*. 50:1-11. <DOI:10.1016/j.psychsport.2020.101741>
122. Stott, A. 2013. South African physical sciences teachers' understanding of force and the relationship to teacher qualification, experience and their school's quintile. *African Journal of Research in Mathematics, Science and Technology Education*. 17(1-2):173-183. <https://doi.org/10.1080/10288457.2013.829599>
123. Sullivan, L., Ding, K., Tattersall, H., Brown, S. & Yang, J. 2022. Social support and post-injury depressive and anxiety symptoms among college-student athletes. *International Journal of Environmental Research and Public Health*. 19(11):6458-6468. <https://doi.org/10.3390/ijerph19116458>
124. Thelwell, R.C., Wagstaff, C.R., Rayner, A., Chapman, M. & Barker, J. 2017. Exploring athletes' perceptions of coach stress in elite sport environments. *Journal of Sports Sciences*. 35(1):44-55. <https://doi.org/10.1080/02640414.2016.1154979>
125. Thelwell, R.C., Weston, N.J., Greenlees, I.A. & Hutchings, N.V. 2008. Stressors in elite sport: A coach perspective. *Journal of Sports Sciences*. 26(9):905-918. <https://doi.org/10.1080/02640410801885933>

126. Tracey, J. 2003. The emotional response to the injury and rehabilitation process. *Journal of Applied Sport Psychology*. 15(4):279-293. <https://doi.org/10.1080/714044197>
127. Tricco, A.C., Lillie, E., Zarin, W., O'Brien, K., Colquhoun, H., Kastner, M., Levac, D., Ng, C., Sharpe, J.P., Wilson, K. & Kenny, M. 2016. A scoping review on the conduct and reporting of scoping reviews. *BMC Medical Research Methodology*. 16(1):1-10. <https://doi.org/10.1186/s12874-016-0116-4>
128. Tshube, T. 2020. Sport & exercise psychology in Africa. *International Journal of Sport Psychology*. 51(5):514-527. doi: 10.7352/IJSP.2020.51.514
129. Udry, E., Gould, D., Bridges, D. & Tuffey, S. 1997. People helping people? Examining the social ties of athletes coping with burnout and injury stress. *Journal of Sport and Exercise Psychology*. 19(4):368-395. <https://doi.org/10.1123/jsep.19.4.368>
130. Ummel, D. & Achille, M. 2016. How not to let secrets out when conducting qualitative research with dyads. *Qualitative Health Research*. 26(6):807-815. <https://doi.org/10.1177/1049732315627427>
131. Vaismoradi, M., Turunen, H. and Bondas, T. 2013. Content analysis and thematic analysis: implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*. 15(3):398-405. <https://doi.org/10.1111/nhs.12048>
132. Vasileiou, K., Barnett, J., Thorpe, S. & Young, T. 2018. Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*. 18(1):1-18. <https://doi.org/10.1186/s12874-018-0594-7>
133. Vigário, P., Teixeira, A. & Mendes, F. 2020. Coach-athlete dyad: perception of psychosocial and environmental factors in the relationship: A case study. *Challenges: New Trends in Physical Education, Sport and Recreation*. 37:666-672. [DOI:10.47197/retos.v37i37.74412](https://doi.org/10.47197/retos.v37i37.74412)
134. Von Rosen, P., Kottorp, A., Fridén, C., Frohm, A. & Heijne, A. 2018. Young, talented and injured: injury perceptions, experiences and consequences in adolescent elite athletes. *European Journal of Sport Science*. 18(5):731-740. <https://doi.org/10.1080/17461391.2018.1440009>
135. Wadey, R., Clark, S., Podlog, L. & McCullough, D. 2013. Coaches' perceptions of athletes' stress-related growth following sport injury. *Psychology of Sport and Exercise*. 14(2):125-135. <https://doi.org/10.1016/j.psychsport.2012.08.004>
136. Wadey, R., Day, M., Cavallerio, F. & Martinelli, L. 2018. Multilevel model of sport injury (MMSI): can coaches impact and be impacted by injury? In *Professional advances in sports coaching*. R. Thelwell & M. Dicks, Eds. London: Routledge. 336-357.

137. Wang, X. & Cheng, Z. 2020. Cross-sectional studies: strengths, weaknesses, and recommendations. *CHEST*. 158(1):65-71. <https://doi.org/10.1016/j.chest.2020.03.012>
138. White, C.J. & Van Dyk, H. 2019. Theory and practice of the quintile ranking of schools in South Africa: A financial management perspective. *South African Journal of Education*. 39(1):1-19. <https://hdl.handle.net/10520/EJC-195036a926>
139. Wiese-Bjornstal, D.M., Smith, A.M., Shaffer, S.M. & Morrey, M.A. 1998. An integrated model of response to sport injury: psychological and sociological dynamics. *Journal of Applied Sport Psychology*. 10:46-69.
140. Williams, J.M. & Parkhouse, B.L. 1988. Social learning theory as a foundation for examining sex bias in evaluation of coaches. *Journal of Sport and Exercise Psychology*. 10(3):322-333. <https://doi.org/10.1123/jsep.10.3.322>
141. World Medical Association. 2013. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *The Journal of the American Medical Association*. 310(20):2191-2194.
142. Wylleman, P. & Lavallee, D. 2004. A developmental perspective on transitions faced by athletes. In *Developmental sport and exercise psychology: A lifespan perspective*. M. Weiss, Ed. Morgantown, WV: Fitness Information Technology. 507-527.
143. Yang, J., Peek-Asa, C., Lowe, J.B., Heiden, E. & Foster, D.T. 2010. Social support patterns of collegiate athletes before and after injury. *Journal of Athletic Training*. 45(4):372-379. <https://doi.org/10.4085/1062-6050-45.4.372>

# The coach's role during an athlete's rehabilitation following sports injury: A scoping review

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Jamie King<sup>1</sup>, Theresa L Burgess<sup>1,2</sup> , Candice Hendricks<sup>1</sup>  
and Fraser Carson<sup>3,4</sup> 

## Abstract

Coaches play a pivotal role during an athletes' rehabilitation, assisting them to deal with the psychological challenges linked with injury recovery and return to sport. However, coaches' views of their roles during rehabilitation, and the extent to which their influences may facilitate psychological coping is unclear. Although athletes value input from their coaches during their injury rehabilitation, their satisfaction with the support provided is varied. To explore the current literature on the role of coaches during an athlete's rehabilitation from injury, a scoping review, following the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews guidelines, was conducted on EBSCOhost, PubMed and Scopus databases. A total of 27 articles met the inclusion criteria after 2716 studies were excluded based on the eligibility criteria during phases of title, abstract and full-text screening. Factors to consider when exploring coaches' roles during injury rehabilitation include athlete's and coaches' age and gender, the type of sport and level of competition, the athletes' role in the team, and the injury severity and type. The major role that coaches play during rehabilitation is providing social support to the injured athlete. The amount and availability of social support, as well as different forms of social support and their perceived prominence to athletes' well-being, are key concepts worth considering when analyzing the role of coaches during injury rehabilitation. Social support provided by coaches to athletes undergoing rehabilitation aids in maintaining the coach–athlete relationship, thereby preventing any unrest between the two upon return to sport.

## Keywords

Gender, goal-setting, psychological coping, social support, well-being

## Introduction

Sporting injury embodies a biopsychosocial paradigm,<sup>1</sup> where supplementary to physical damage, mental distresses can be induced, additionally opposing rehabilitation and recovery.<sup>2</sup> It is known that cognitive judgements, emotional responses, and behavioural reactions to injury have a profound impact on an athlete's rehabilitation.<sup>3</sup> In addition to athletes, coaches are also psychologically affected by an injury to one of their athletes.<sup>1</sup> Elite-level coaches report that significant injury, as well as rehabilitation, are major stressors for them to deal with.<sup>1</sup> Coaches may feel frustrated or angry that their injured player is unavailable for selection which may negatively impact the team's performance<sup>4</sup> and the injured athlete's morale.<sup>5</sup> A deeper understanding into the psychological influence of injury on rehabilitation amongst all athletes and coaches is crucial to identify ways in which athletes and coaches can confront these challenges both individually and as a pair in a strong coach–athlete relationship where possible.

In contemporary sports injury management, athletes, medical practitioners, and coaches work as a team to achieve successful rehabilitation.<sup>6</sup> Coaches' indirect contributions to rehabilitation can be barriers or facilitators to the

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Reviewer: Britt Brewer (Springfield College, MA, USA)

<sup>1</sup>Division of Physiotherapy, University of Cape Town, Cape Town, South Africa

<sup>2</sup>Centre for Medical Ethics and Law, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

<sup>3</sup>Department of Sport and Exercise Science, LUNEX International University of Health, Exercise and Sports, Differdange, Luxembourg

<sup>4</sup>Luxembourg Health & Sport Sciences Research Institute A.s.b.l., Differdange, Luxembourg

### Corresponding author:

Fraser Carson, Department of Sport and Exercise Science, LUNEX International University of Health, Exercise and Sports, Differdange 4671, Luxembourg, Luxembourg.

Email: [fraser.carson@lunex-university.net](mailto:fraser.carson@lunex-university.net)

athlete's overall experience of rehabilitation.<sup>7</sup> Coaches' interactions with injured athletes may be vital in aiding athletes to deal with the psychological issues associated with injury rehabilitation and return-to-sport (RTS).<sup>8</sup> Higher levels of athlete satisfaction are linked with actions of supportive nature, guidance and positive feedback from coaches.<sup>9</sup> Elite-level coaches strive to tackle psychosocial challenges associated with injury rehabilitation and RTS by addressing athletes' autonomy, competence, and relatedness needs. These coaches have reported to foster a team approach to rehabilitation, facilitate effective communication amongst the rehabilitation team, provide social support, encourage positive thinking, promote goal setting, and suggest role models in their efforts to assist injured athletes with rehabilitation and RTS.<sup>8</sup> From the coach's viewpoint, one-on-one training sessions, making sure athletes stay engaged in their sport and team environment, and offering informational, emotional and tangible forms of social support, are effective ways of facilitating rehabilitation and RTS.<sup>10</sup> Some coaches, however, propose that their main role is to prepare the athlete for the physical demands of RTS, while only a few attempt to address the athlete's psychological issues during injury rehabilitation.<sup>10</sup>

Although athletes value input from their coaches during their injury rehabilitation, their satisfaction with the support provided is varied.<sup>8</sup> This may be due to coaches being able to acknowledge the psychological manifestations of injury rehabilitation experienced by athletes, but potentially lacking the expertise and confidence to impact them through their influences, particularly amongst non-elite coaches. Therefore, the purpose of this scoping review is to investigate what is known regarding the role coaches play in an athlete's rehabilitation following sports injury, and how this relates to athlete psychological well-being, performance and RTS.

## Materials and methods

### Search strategy

A preliminary search of three electronic databases (EBSCOhost ( $n = 214$ ), PubMed ( $n = 764$ ), and Scopus ( $n = 1765$ )) following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) guidelines was conducted in July 2022. The search strategy included the key terms: coach OR coaches AND injured athletes, social OR psychological OR psychosocial AND support, and sport injury OR rehabilitation. In addition, a secondary search was conducted across the same databases and search engines, using all the predetermined search terms and identified index terms.

### Eligibility criteria and data extraction

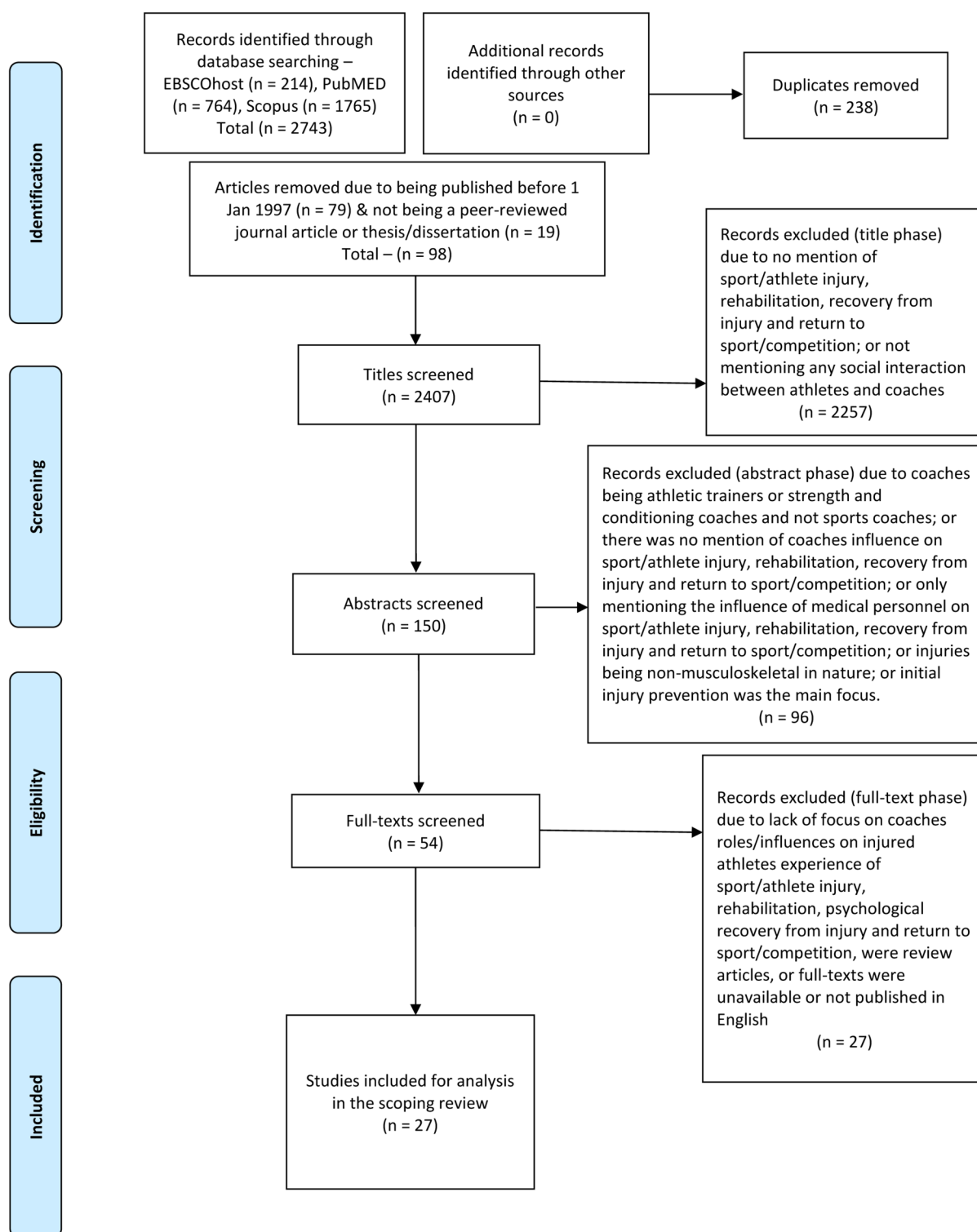
Empirical studies related to musculoskeletal injury of any variety, severity and duration were included, if the athlete

required rehabilitation. Concussion and other neurological injuries such as spinal cord injuries were excluded. Both quantitative and qualitative studies were considered, including all forms of peer-reviewed articles such as case studies, randomized control trials, experimental, cohort and cross-sectional studies. In addition, gray literature, such as theses/dissertations were considered. Articles published before 1 January 1997 were excluded, in attempting to provide current, up-to-date evidence on the matter. Articles were only considered if full texts were available and in English.

All articles (2743 articles) were imported to Rayyan (<http://rayyan.qcri.org>), a reference organizer, to assist with duplicate removal and article screening. This program allowed reviewers to screen the articles independently, achieving reliability. Data were extracted by the first author and validated by another independent reviewer (separate from this research but knowledgeable of the subject matter), according to the eligibility criteria. Any discrepancies between the two reviewers were debated, and when no consensus could be obtained, a third reviewer (a member of the research team), was consulted for agreement. This initial title screening led to the exclusion of 2257 articles, with 150 articles remaining for additional screening. Articles were excluded due to no mention of sport/athlete injury, rehabilitation, recovery from injury and return to sport/competition; or not mentioning any social interaction between athletes and coaches. Following the abstract screening, a further 96 articles were excluded, leaving 54 articles for final screening. Articles were excluded due to coaches being athletic trainers or strength and conditioning coaches and not sports coaches; or there was no mention of coaches' influence on sport/athlete injury, rehabilitation, recovery from injury and return to sport/competition; or only mentioning the influence of medical personnel on sport/athlete injury, rehabilitation, recovery from injury and return to sport/competition; or injuries being non-musculoskeletal in nature; or initial injury prevention was the main focus. Lastly, the full texts of the remaining 54 articles were screened independently, excluding 27 articles. Full-text exclusion was based on a lack of focus on coaches' roles/influences on injured athletes experience of sport/athlete injury, rehabilitation, psychological recovery from injury and return to sport/competition, were previously conducted systematic reviews or meta-analysis, or full texts were unavailable or not published in English. Twenty-seven articles were included in the scoping review. A full flow diagram is presented in Figure 1.

## Results

From the 27 studies that included participants, a total of 1906 athletes (male = 1111, female 795) and 62 coaches (male = 39, female = 17, not stated = 6) were recorded. Athlete ages ranged from 12 to 59 years, however, many of the studies focused on college students between the ages of 18–24. Coaches ages ranged from 25 to 62 years.



**Figure 1.** Preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) flow diagram.

There were more qualitative (16) than quantitative (10) studies and one mixed method study. Eight studies used the Social Support Survey/Questionnaire, or a modified version of this self-reported questionnaire, to measure

social support, using a six-point Likert scale, while the other two quantitative studies used various other self-report questionnaires. Amongst qualitative studies, semi-structured interviews were used by all but three studies that utilized a

phenomenological interview structure, online open-ended surveys, or the Scanlan Collaborative Interview Method to achieve their aims and objectives.

In general, coaches were identified as being in a prime position to provide social support, and athletes look to them for guidance and assurance. However, the reported provision of social support is more common from teammates and those involved in the physical rehabilitation program (i.e., physiotherapist). Support reported as being provided to athletes included goal setting, emphasizing effort and task completion to raise athlete competence, and emotional support. A lack of support from coaches negatively affects the emotional responses of athletes, which can be damaging to the rehabilitation process. Detailed characteristics and an explanation of the key findings are provided in Table 1.

## Discussion

This scoping review demonstrates that there is growing interest in sports injury psychology, with 19 of the 27 studies published in the last decade. However, studies that investigate the role of coaches during rehabilitation following injury are still limited. Those that have aimed to analyze various aspects of social support provided by coaches to athletes during the rehabilitation following sports injury. These included degrees of social support satisfaction, amount and availability, as well as varying social support types and their perceived importance to athletes' well-being.<sup>8</sup> In this context, social support is a transactional procedure between two members of a dyad that is enhanced when the type, extent, and timing of the support provided by coaches corresponds with the athletes' needs.<sup>32</sup> Coaches' strategies for addressing athletes' psychosocial difficulties associated with injury and rehabilitation were also described.<sup>10</sup>

During the process of rehabilitation, athletes reported relying heavily on social support provided by their coaches.<sup>33</sup> Overall findings suggest that athletes are more satisfied with the social support they receive from medical personnel such as athletic trainers and physiotherapists compared to coaches.<sup>11,15,34</sup> Feeling isolated from the team and coaching staff during rehabilitation is proposed as a potential reason for this.<sup>35</sup> Yet, athletes mentioned they would accept and appreciate more social support from coaches during their rehabilitation.<sup>15</sup> Injured athletes reported less satisfaction with task-challenge and emotional-challenge support provided by coaches during injury rehabilitation, compared to pre-injury.<sup>24</sup> In another study, injured athletes were most satisfied with listening and task-challenge support and least satisfied with tangible-assistance and reality-confirmation support provided by coaches.<sup>36</sup> One study reported that injured athletes were dissatisfied with the social support they received from their coaches during the initial stages of rehabilitation, however, highlighted the importance of the social support provided by coaches during the final phase of

rehabilitation, known as RTS.<sup>11</sup> Hence, coaches should acknowledge athletes perceived satisfaction with their delivery of social support and consider the stage of rehabilitation the athlete finds themselves in, to optimize their support in meeting their athletes expectations. More research is needed to reach a consensus on exactly what forms of social support athletes require at various stages of rehabilitation for them to be satisfied with their coaches role during their injury recovery.

The perceived amount and availability of social support seems to reduce the stress associated with athletes' rehabilitation and RTS, by preoccupying athletes to prevent attentional disturbances during the performance.<sup>16</sup> Findings from studies in this review indicate that emotional support was significantly more available from teammates compared to that of coaches.<sup>36</sup> Furthermore, another study revealed that there was a significantly greater availability of social support provided by athletic trainers compared to coaches.<sup>34</sup> Intercollegiate athletes perceived moderate-to-high amounts of social support from their coaches.<sup>27</sup> This may be because these coaches acknowledge that these athletes may be living away from home, and thus are likely to receive less family support, meaning coaches might feel the need to provide them with more support.<sup>27,33,36</sup>

Social support provided by coaches was shown to be a vital psychosocial contributor to athletes' well-being during injury rehabilitation.<sup>24</sup> Task-appreciation and task-challenge support provided by coaches was mostly attributed to athletes' well-being, while tangible-assistance support<sup>34</sup> and emotional-challenge support<sup>36</sup> were the least. Athletes considered listening and emotional support from coaches as more important to their well-being during injury rehabilitation, compared to pre-injury.<sup>24</sup> However, athletes valued social support from athletic trainers as a more important contributor to their well-being following injury when compared to that provided by coaches.<sup>34</sup>

In addressing injured athletes' psychosocial needs, coaches reported using different strategies including coordination of a multidisciplinary "team approach" to rehabilitation, fostering open communication with athletes and treatment team members, providing social support, enforcing positive thinking and goal setting, and recommending role models.<sup>8</sup> The suggested coping methods that coaches can use to facilitate athletes' recovery from injury and rehabilitation include scheduling rehabilitation around team training/events, promoting social support structures, finding a way to include injured athletes in training, accompanying injured athletes during rehabilitation sessions, sharing motivational injury recovery stories, setting SMART goals, and employing imagery and positive self-talk.<sup>25</sup> Coaches must consider the availability of resources and time demands before preparing their action plans to facilitate injured athletes undergoing rehabilitation.<sup>26</sup> However, further research is required to validate the effectiveness of these strategies.

**Table 1.** Summary of evidence.

Author	Participants	Methodology	Key findings
Bon & Doupona <sup>11</sup>	57 female athletes (19–38 years old with mean age of 26.3 ± 2.6 years) 1 head coach (51 years old).	Quantitative: Self-report questionnaire - Social Support Questionnaire (modified version) Qualitative: Semi-structured interviews	<p><i>Active players</i></p> <ul style="list-style-type: none"> <li>• The active players' families offered the highest level of social support, followed by the physiotherapist, teammates and partners, while the coaching staff members' scores were deficient</li> <li>• The highest level of satisfaction with social support was reported for family members, and the lowest for coaches</li> <li>• The support from the strength and conditioning coach was much higher than that from the head coach</li> <li>• The players were satisfied the most with the emotional and tangible support from family members, but dissatisfied with the head coach's support</li> <li>• Athletes highlighted the role of the head coach in the last phase of rehabilitation – a (fast) return to active playing, where the support from the coach was considered vital</li> </ul> <p><i>Coaching staff members</i></p> <ul style="list-style-type: none"> <li>• Head coach: Reported negative experiences with some players that took the social support which was offered to them for granted and did not express any gratitude or solidarity with the situation</li> <li>• The coaching staff members considered providing social support too demanding, which could lead to internal conflicts between focusing on the team's performance and results, and trying to provide sufficient support to injured athletes</li> <li>• Coaches felt that they were not competent enough to provide sufficient, high-quality social support</li> </ul> <p><i>Cause of injury</i></p> <ul style="list-style-type: none"> <li>• Coaches putting pressure on athletes to continue playing through the pain as pain tolerance is seen as a form of toughness</li> </ul> <p><i>Initial reaction to injury</i></p> <ul style="list-style-type: none"> <li>• Athletes highly valued support from coaches, indicating that they were very supportive during the initial stages of injury</li> </ul> <p><i>Healing and rehabilitation</i></p> <ul style="list-style-type: none"> <li>• Athletes agreed that during the initial period, listening and emotional support from coaches were crucial</li> <li>• Coaches belief in injured athletes helped improve their self-image</li> <li>• Empathy, understanding and sensitivity to issues of the injured athlete, help speed up the rehab process and significantly lessen the mental anguish that the athlete struggles with</li> </ul> <p><i>Return to play</i></p> <ul style="list-style-type: none"> <li>• Feedback from coaches boosted athletes' self-esteem and self-confidence and gives athletes a clear picture of where and how to improve</li> </ul>
Borg <i>et al.</i> <sup>12</sup>	4 male and 2 female athletes	Semi-structured interviews	

(continued)

Table I. (continued)

Author	Participants	Methodology	Key findings
Carson & Polman <sup>13</sup>	5 male athletes (18–27 years old)	Semi-structured interviews Pre-designed diary	<p><i>Pre-return to competition – Social support</i></p> <ul style="list-style-type: none"> <li>• ‘Star players’: Coaches provided encouragement, and engaged in open discussions on expectations regarding RTP. ‘Non-key performers’: Reported no discussions on expectations regarding RTP, and feelings of isolation</li> </ul> <p><i>Post-return to competition – Problem-focused coping &amp; social support</i></p> <ul style="list-style-type: none"> <li>• Coaches are important for goal-setting (setting pre-determined game-time limits or specific performance goals) which reduced athletes’ anxieties</li> <li>• The importance of social support provided by coaches was highlighted, specifically concerning coaches providing positive feedback</li> </ul>
Chan et al. <sup>14</sup>	98 male and 108 female athletes (Mean age – 24.75 years old)	Self-reported questionnaires: - Sport motivation: Behavioural Regulation in Sport Questionnaire (BRSQ) and battery of psychological measures - Personality: General Causality Orientation Scale (GCOS) - Autonomy support: Health Care Climate Questionnaire (HCCQ) - Treatment motivation: Treatment Self-Regulation Questionnaire (TSRQ) - Treatment intention: Self-developed questionnaire	<p><i>Support &amp; motivation</i></p> <ul style="list-style-type: none"> <li>• Autonomy orientation was positively associated with autonomy support from the coach</li> <li>• Controlled orientation showed negative relationships with autonomy support from coaches</li> <li>• Autonomy support from coaches formed positive associations with autonomous sport motivation</li> <li>• Autonomy support from coaches was only related to sport motivation and not treatment motivation. This suggests that the trans-contextual effects of motivation were unlikely to be due to coaches providing autonomy support</li> </ul>
Clement & Shannon <sup>15</sup>	27 male and 22 female athletes (Mean age – 20.1 years old)	Self-reported questionnaire: - Social Support Survey (modified version)	<p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Athletes were significantly more satisfied with social support provided by athletic trainers than by teammates or coaches</li> <li>• Athletes were significantly more satisfied with listening support than with reality-confirmation support from any of the 3 sources (teammates, coaches, athletic trainers)</li> <li>• There was a significantly greater availability of social support provided by athletic trainers than by teammates or coaches</li> <li>• There was a significantly greater contribution of social support to athletes’ well-being provided by athletic trainers than by teammates or coaches</li> <li>• There was a significantly greater contribution of listening, emotional, reality-confirmation, and task-appreciation support to athletes’ well-being, compared to tangible support from any of the 3 sources (teammates, coaches, athletic trainers)</li> <li>• No relationships were found between any of the 8 types of social support and previous injury</li> <li>• Age and year in school were negatively correlated with the satisfaction of coaches’ tangible support</li> <li>• No differences were found based on severity of injury</li> </ul>

(continued)

Table 1. (continued)

Author	Participants	Methodology	Key findings
Corbillon et al. <sup>16</sup>	46 males and 26 female athletes (18–29 years old)	Self-reported questionnaire: - Social Support Survey (modified version)	<p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Athletes were more satisfied with task-challenge support provided by coaches compared to their teammates</li> <li>• Athletes were most satisfied with listening and task-challenge support provided by coaches</li> <li>• Athletes were least satisfied with tangible assistance and reality-confirmation support provided by coaches</li> <li>• Teammates availability of emotional support was significantly greater compared to that of coaches</li> <li>• Coaches provided the greatest availability of listening support, and least availability of tangible-assistance</li> <li>• There was a greater contribution towards athletes' well-being in terms of task-challenge support, and lesser contribution of reality-confirmation support provided by coaches compared to teammates</li> <li>• Task-appreciation and task-challenge support provided by coaches contributed the most towards athletes' well-being, while tangible-assistance and emotional-challenge support contributed the least</li> <li>• Females, compared to males, reported greater contributions of emotional-challenge support provided by coaches</li> <li>• Age was not significantly related to any types of social support provided by coaches</li> <li>• Both years of coaching experience and number of athlete injuries showed negative relationships with social support provided by coaches</li> <li>• Starters, compared to non-starters, reported higher satisfaction and greater contributions towards their well-being regarding task-appreciation support provided by coaches</li> </ul>
D'Astous et al. <sup>17</sup>	45 male and 30 female athletes (Mean age – 21 years old)	Self-reported questionnaires: - Perceived competence: Intrinsic Motivation Inventory (IMI) - Achievement goals: Achievement Goal Questionnaire for Sport (AGQ-S) - Return to sport outcomes: Return to Sport After Serious Injury Questionnaire (RSSIQ)	<p><i>Goal-setting</i></p> <ul style="list-style-type: none"> <li>• Coaches could encourage the adoption of task-approach goals amongst returning athletes by emphasising effort, task-completion, correct form, and consistency</li> <li>• Comparison to others, or to one's preinjury self, or to one's perceived potential had they not been injured, should be de-emphasized, as such goals could be detrimental to athletes' motivation and enjoyment should they fail to "match up" when returning to sport</li> <li>• The benefits of task-approach goals show that coaches can help injured athletes by adopting language that: (a) orients athletes towards attaining success as opposed to avoiding failure; (b) emphasises effort, task completion, and correct form; (c) avoids comparing athletes to others or to their preinjury standards of performance</li> </ul>

(continued)

Table 1. (continued)

Author	Participants	Methodology	Key findings
Gilbert <i>et al.</i> <sup>18</sup>	1 female athlete (23 years old)	Qualitative case study	<ul style="list-style-type: none"> <li>• Injured athletes may experience stress related to injury and rehabilitation in the following ways: physical restrictions, feelings of isolation, time and effort spent on rehabilitation, and fear of re-injury</li> <li>• Coping methods that coaches can use to facilitate athletes' recovery from injury and rehabilitation are: scheduling rehabilitation around team training/events, promoting social support structures, finding ways to include injured athletes in training, accompanying rehabilitation sessions, sharing motivational injury recovery stories, setting SMART goals, employing imagery, and positive self-talk. Coaches must consider availability of resources and time demands</li> </ul>
Grindstaff <i>et al.</i> <sup>19</sup>	2 male and 3 female athletes (14–22 years old)	Phenomenological interviews	<ul style="list-style-type: none"> <li>• Unsympathetic coaches exacerbated negativity for injured athletes</li> <li>• Injured athletes were able to view their sport from a coaching perspective, which helped them to better understand their sport and their actual coach</li> <li>• Athletes initially thought that because they were injured, they had let their coaches down</li> <li>• Athletes felt disconnected from the team when not included in team events</li> <li>• Some coaches blamed the athlete for getting injured, which was perceived as a lack of empathy</li> <li>• Coaches providing social support (caring for and sympathising with the injured athlete, not giving up on them and proving to be 'more than just a coach' in the athletes' life) was considered instrumental</li> </ul>
Hallquist <i>et al.</i> <sup>20</sup>	5 coaches	Semi-structured interviews	<ul style="list-style-type: none"> <li>• Athletes had to approach coaches to receive support</li> <li>• Coaches expected health professionals to provide them with information on how to support the young, injured athletes as they lacked sufficient time and knowledge</li> <li>• Coaches reported the importance of making the injured athlete feel part of the team and showing their understanding towards them and their injury situation</li> <li>• Coaches were not sure who had the responsibility to provide support to athletes, and thought someone else would take the responsibility</li> <li>• Children may be more sensitive to emotional distress after injury, and lack self-confidence and control with rehabilitation, emphasising the importance of support for young athletes</li> <li>• Coaches felt girls found it more difficult to RTS compared to boys</li> <li>• Coaches felt they lacked education in psychological training. Therefore, coaches expressed the importance of having experience in dealing with the psychological aspects of injury</li> </ul>

(continued)

Table 1. (continued)

Author	Participants	Methodology	Key findings
Hildingsson <i>et al.</i> <sup>21</sup>	6 female athletes (18–23 years old)	Semi-structured interviews	<ul style="list-style-type: none"> <li>• Lack of coaches' support when undergoing rehabilitation beside the team made some athletes avoid team training sessions and decreased sense of belonging to the group. Some athletes tried performing rehabilitation at home but felt lonely and demotivated</li> <li>• Coaches' support was viewed as diverse. Those describing receiving support from coaches experienced it as very comforting. Some coaches asked athletes how they were proceeding and how things were going both inside and outside of sport, which was appreciated</li> <li>• Some athletes mentioned that coaches pushed them to RTS quickly, with high expectations, which became stressful when not fully ready</li> </ul>
Iñigo <i>et al.</i> <sup>22</sup>	8 male and 2 female athletes (18–24 years old)	Scanlan Collaborative Interview Method (SCIM)	<p><i>Support &amp; commitment</i></p> <ul style="list-style-type: none"> <li>• Sense of obligation to continue playing after injury was a driving force for injured athletes, as coaches pressure and motivation were instrumental to RTS</li> <li>• Coaches served as sources of social constraint to RTS</li> <li>• Coaches also provided social support that increased athletes' commitment to RTS</li> </ul>
Kunnen <i>et al.</i> <sup>23</sup>	12 male and 9 female athletes (19–51 years old Mean age – 28 years old)	Online, open-ended survey's	<ul style="list-style-type: none"> <li>• Athletes relied on implementing their own mental strategies because of an absence of a sport psychologist or a coach educated in psychological skills training at their level of competition and/or a lack of awareness or finances to seek their own support</li> <li>• Athletes did not report pressure to RTP from their coaches</li> <li>• A common strategy for addressing barriers to relatedness is social support from coaches</li> <li>• Coaches have a key role in building athlete confidence so that they were psychologically ready for RTS, primarily through feedback that athletes were meeting physical performance goals during rehabilitation</li> </ul>
Malinauskas <sup>24</sup>	17 male and 12 female athletes (18–25 years old)	Self-reported questionnaire: - Social Support Survey (modified version)	<p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Athletes were more satisfied with task-challenge and emotional-challenge support provided by coaches pre-injury compared to during rehabilitation</li> <li>• Athletes perceived listening and emotional support provided by coaches as more important to their well-being during rehabilitation compared to pre-injury</li> </ul>

(continued)

Table I. (continued)

Author	Participants	Methodology	Key findings
Maurice <sup>25</sup>	8 male and 5 female coaches (29–62 years old Mean age – 45 years old)	Semi-structured interviews	<p><i>Coaches' knowledge</i></p> <ul style="list-style-type: none"> <li>• Using resources: recognizing when to use appropriate resources to help injured athletes, knowing roles and responsibilities of support staff, considering access to resources</li> <li>• Injury prevention: identifying training techniques to decrease injury risk, but lack knowledge on how to deal with injury occurrence</li> <li>• Phases of injury rehabilitation: monitoring emotional responses initially, and acknowledging performance decrements during rehabilitation</li> <li>• Sustaining injured athletes' involvement: keeping athletes involved in the team (providing task-challenge support and scheduling rehabilitation during team training)</li> <li>• Athlete welfare: making safe decisions regarding reintegration to training and RTS, by trusting athletes' and medical staff judgement of readiness</li> <li>• Communicating with injured athletes: listening and talking to injured athletes effectively, by remaining open and adaptable to communication and for athletes' feedback</li> <li>• Perceiving athletes as barriers: athletes may have unrealistic expectations regarding their injury recovery, or be dishonest concerning the injury severity, highlighting the importance of trust and confidence</li> <li>• Reflecting on personal coaching experiences: using previous experiences to reflect upon and improve provision of support for injured athletes</li> <li>• Reflecting on personal athletic experiences: using personal experiences of injury as an athlete to inform current provision of support for injured athletes</li> </ul>
Maurice et al. <sup>26</sup>	8 male and 5 female coaches (29–62 years old Mean age – 45 years old)	Semi-structured interviews	<p><i>Coaches' knowledge</i></p> <ul style="list-style-type: none"> <li>• Using resources: recognizing when to use appropriate resources to help injured athletes, knowing roles and responsibilities of support staff, considering access to resources</li> <li>• Injury prevention: identifying training techniques to decrease injury risk, but lack knowledge on how to deal with injury occurrence</li> <li>• Phases of injury rehabilitation: monitoring emotional responses initially, and acknowledging performance decrements during rehabilitation</li> <li>• Sustaining injured athletes' involvement: keeping athletes involved in the team (providing task-challenge support and scheduling rehabilitation during team training)</li> <li>• Athlete welfare: making safe decisions regarding reintegration to training and RTS, by trusting athletes' and medical staff judgement of readiness</li> <li>• Communicating with injured athletes: listening and talking to injured athletes effectively, by remaining open and adaptable to communication and for athletes' feedback</li> <li>• Perceiving athletes as barriers: athletes may have unrealistic expectations regarding their injury recovery, or be dishonest concerning the injury severity, highlighting the importance of trust and confidence</li> </ul>

(continued)

Table I. (continued)

Author	Participants	Methodology	Key findings
Newman & Weiss <sup>27</sup>	108 male and 138 female athletes (18–24 years old)	Self-reported questionnaire: - Social Support Survey	<ul style="list-style-type: none"> <li>• Reflecting on personal coaching experiences: using previous experiences to reflect upon and improve provision of support for injured athletes</li> <li>• Reflecting on personal athletic experiences: using personal experiences of injury as an athlete to inform current provision of support for injured athletes</li> </ul> <p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Athletes perceived a moderate-to-high level of social support from their coaches</li> <li>• Level of sporting competition: NCAA Division II and III athletes perceived higher levels of social support (more acceptance and belonging) from head coaches compared to NCAA Division I athletes</li> <li>• Athletes' role in the team: No significant differences in amount of social support when comparing starters and non-starters</li> <li>• Athlete perceived higher amounts of social support for those involved in revenue compared to non-revenue sports</li> </ul>
Podlog & Dionigi <sup>8</sup>	5 male and 3 female coaches (25–53 years old)	Semi-structured interviews	<ul style="list-style-type: none"> <li>• Coaches use the following strategies to address athletes' psychosocial needs: (a) coordination of a "team approach" to rehabilitation; (b) fostering open communication with athletes and treatment team members; (c) social support; (d) positive thinking and goal setting; and (e) role models</li> <li>• Coaches addressed competence, autonomy, and relatedness needs in facilitating athletes' return from injury</li> </ul>
Podlog & Eklund <sup>10</sup>	10 male and 4 female coaches	Semi-structured interviews	<p><i>Decision-making processes in RTS</i></p> <ul style="list-style-type: none"> <li>• Medical clearance is required</li> <li>• Clear communication between coaches and medical staff is key</li> <li>• Coaches' awareness of athletes' individual characteristics is key</li> </ul> <p><i>Coach perceptions of the stressors of RTS</i></p> <ul style="list-style-type: none"> <li>• Physical stressors: fear of re-injury, fitness concerns, effect of physical limitation on performance</li> <li>• Social stressors: social isolation, pressure for early RTP, negative social comparisons</li> <li>• Performance stressors: falling behind others, team selection, reaching pre-injury performance levels</li> </ul> <p><i>Coach perceptions about their role in assisting athletes returning from injury</i></p> <ul style="list-style-type: none"> <li>• Individual (one-on-one) training sessions</li> <li>• Keeping athletes involved in sport</li> <li>• Providing social support</li> </ul>

(continued)

Table I. (continued)

Author	Participants	Methodology	Key findings
Podlog et al. <sup>2</sup>	3 male and 8 female athletes (12–17 years old Mean age – 15.3 years old)	Semi-structured interviews	<p><i>Injury stress</i></p> <ul style="list-style-type: none"> <li>• In the middle-to-later stages of rehabilitation, social exclusion and separation from the team environment was reported</li> <li>• Athletes felt helpless not being able to affect the match outcome</li> </ul> <p><i>Coping strategies</i></p> <ul style="list-style-type: none"> <li>• Problem-focused goal-setting: Setting goals in conjunction with coaches helped expedite athletes' recovery from injury by maintaining motivation, reducing uncertainties associated with the injury experience, and preserving a focus on future athletic attainment.</li> <li>• Injured athletes highlighted rehabilitation goals, those for the immediate return to competition, and more long-term goals.</li> </ul> <p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Athletes expressed the importance of social support from coaches, in attempting to attain their goals and alleviate stress</li> <li>• Emotional support (comfort and encouragement from coaches to work through rehabilitation challenges) was the main form of social support received by injured athletes</li> <li>• Social support served a variety of functions including the maintenance of a positive outlook, enhancing motivation to comply with rehabilitation protocols, and facilitating physical and emotional healing</li> <li>• None of the athletes indicated feeling pressure to RTP from their coaches</li> </ul> <p><i>Recovery outcome</i></p> <ul style="list-style-type: none"> <li>• Athletes relied on receiving positive feedback from coaches to perceive their RTP as successful</li> </ul>
Podlog et al. <sup>28</sup>	138 male and 66 female athletes (18–36 years old Mean age – 21.75 years old)	Self-reported questionnaires: <ul style="list-style-type: none"> <li>- Need Satisfaction Scale (modified version)</li> <li>- Positive and Negative Affect Scale (PANAS)</li> <li>- Self-Esteem Scale (SES)</li> <li>- Subjective Vitality Scale (SVS)</li> <li>- Return to Sport after Serious Injury Questionnaire (RSSIQ)</li> </ul>	<ul style="list-style-type: none"> <li>• Coaches indicated that ensuring athletes feel connected to their teammates and their sport through provision of emotional, tangible, and informational support is crucial in offsetting potential stressors associated with RTS</li> </ul>

(continued)

**Table 1.** (continued)

Author	Participants	Methodology	Key findings
Podlog <i>et al.</i> <sup>29</sup>	4 male and 3 female athletes (18–30 years old Mean age – 21.9 years old)	Semi-structured interviews	<p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Coaches' social support facilitated the development of confidence. Positive feedback (esteem support), reassurance and informational support following injury-related setbacks were seen as integral in the development of confidence in RTS</li> <li>• Feeling wanted by coaches was closely tied to the importance of receiving social support</li> <li>• Athletes placed strong emphasis on the need for support, in particular from coaches in increasing confidence in the injured body part and in relieving injury concerns</li> <li>• Coaches were influential in setting effective goals that facilitated realistic expectations</li> <li>• Feeling wanted by coaches contributed to enhanced motivation levels. Coaches who verbalized their desire to have the injured athlete return and recognized the missed contributions of the injured athlete helped energise athletes to achieve and surpass preinjury levels</li> </ul>
Robbins & Rosenfeld <sup>15</sup>	19 male and 16 female athletes (18–24 years old)	Self-reported questionnaire: - Social Support Survey	<p><i>Social support</i></p> <ul style="list-style-type: none"> <li>• Satisfaction with task challenge support provided by assistant coaches was significantly higher pre-injury compared to during rehabilitation</li> <li>• Athletes more satisfied with social support provided by athletic trainers, compared to coaches. No differences between athletic trainers and head coaches' emotional-challenge support</li> <li>• Listening, task-appreciation, task-challenge, and emotional support provided by athletic trainers were perceived as most important to athletes' well-being compared to that provided by head and assistant coaches</li> <li>• No differences between the coaches and athletic trainers regarding the importance of their emotional-challenge and reality-confirmation support on athletes' wellbeing</li> <li>• Athletes would accept and appreciate more social support from coaches during their rehabilitation</li> </ul>

(continued)

Table 1. (continued)

Author	Participants	Methodology	Key findings
Ruddock-Hudson et al. <sup>30</sup>	8 male athletes (Mean age – 24.5 years old)	Semi-structured interviews	<p><i>Reaction to Injury</i></p> <ul style="list-style-type: none"> <li>• Athletes felt disengaged from the club while seeking social support</li> <li>• Coaches offered injured players the opportunity to take part in match committee discussions, assist in a coaching role, and developing other players</li> <li>• Coaches were identified as support providers. Athletes acknowledged the genuine concern that was shown by coaches. Athletes illustrated how coaches contacted them within days after their injury and that they were encouraging about their prospect of full recovery</li> </ul> <p><i>Reaction to Rehabilitation</i></p> <ul style="list-style-type: none"> <li>• Athletes received minimal support and interaction from coaches during rehabilitation</li> </ul> <p><i>Reaction to Return to Sport</i></p> <ul style="list-style-type: none"> <li>• Athletes felt pressure from coaching staff to perform at high standards. Athletes appraised that it was hard to “get away from the attention” that had been placed on them as a player returning from a long-term injury</li> <li>• There was still a lack of perceived support from the coaches</li> </ul>
Sullivan et al. <sup>31</sup>	400 male and 197 female athletes (18–24 years old)	Self-reported questionnaires: - 20-item Center for Epidemiological Studies Depression Scale (CESD) - 40-item State–Trait Anxiety Inventory (STAI) - Social Support Questionnaire	<p><i>Pre-injury depression and anxiety</i></p> <ul style="list-style-type: none"> <li>• No differences in baseline depression and anxiety scores by sex or injury severity</li> <li>• School year at enrolment, sport played, and ethnicity was associated with anxiety scores, with freshmen and baseball players reporting lower anxiety scores at baseline. Non-white, men’s basketball players, and women’s field hockey and volleyball players reported higher depression scores at baseline</li> </ul> <p><i>Changes in social support throughout recovery</i></p> <ul style="list-style-type: none"> <li>• While the amount and satisfaction of social support increased from baseline to 1-week post-injury, no significant changes or decreases were observed from 1-week post-injury to RTP</li> <li>• There was a higher amount and greater satisfaction with social support received from family and friends, compared to sports personnel (coaches, athletic trainers, teammates)</li> <li>• Satisfaction with social support received from sports personnel (coaches, athletic trainers, teammates) increased from baseline to 1-week post-injury, while there were no changes observed in the amount of social support received from sports personnel during the same period</li> <li>• Injured athletes reported decreased satisfaction with social support received from sports personnel (coaches, athletic trainers, teammates) from 1-week post-injury to RTP, while there were no changes in the amount of social support received from sports personnel (coaches, athletic trainers, teammates) during the same period</li> </ul> <p><i>Effects of changes in social support on changes in depression and anxiety post-injury</i></p> <ul style="list-style-type: none"> <li>• No significant effects of changes in the amount and satisfaction of social support on changes in post-injury depression or anxiety, after adjusting for potential covariates</li> </ul>

(continued)

Table I. (continued)

Author	Participants	Methodology	Key findings
Wadey <i>et al.</i> <sup>28</sup>	8 male coaches (30–59 years old Mean age – 45.7 years old)	Semi-structured interviews	<p><i>Coaches' perceptions of athletes' stress-related growth</i></p> <ul style="list-style-type: none"> <li>• Athletes' beliefs: Rehabilitation adherence speeds up recovery and helps to overcome injury. Athletes are more open about present thoughts and feelings and less focussed on the past and future</li> <li>• Athletes' attitudes: Positive upon RTP, greater desire to learn and improve, stronger mental toughness and ability to cope with stress</li> <li>• General qualities: Greater maturity, more organised and reflective, balanced outlook on life, renewed sense of purpose</li> <li>• Knowledge: Greater knowledge of own body and how to prevent injury. Better knowledge regarding nutrition, rehabilitation, recovery, and risk factors for injury.</li> <li>• Intelligence: Better emotional and sporting intelligence</li> <li>• Athletes' sporting qualities: Increased sporting motivation and focus to help overcome barriers, greater sporting confidence in capabilities to work on other physical and mental aspects of their game</li> <li>• Athletes' coping strategies: Developed/refined coping skills to regulate emotions</li> <li>• Athletes' social support: Stronger coach–athlete relationships throughout injury recovery (sympathy, guidance, support for athletes provided by coaches). Athletes see coaches as 'more than just a coach', and spend more time together</li> </ul> <p><i>Behavioural indicators of stress-related growth</i></p> <ul style="list-style-type: none"> <li>• General demeanour: Body language (more relaxed and positive)</li> <li>• Health: Devoting more time to injury prevention strategies, and avoiding reckless activity that may increase injury risk</li> <li>• Empathy: Athletes actively seeking out other teammates to offer support</li> <li>• Tactical ability: Derived from improved sporting intelligence</li> <li>• Behavioural coping: Athletes were more able to deal with stress and adversity and work towards more realistic goals</li> </ul>
Yang <i>et al.</i> <sup>32</sup>	167 male and 89 female athletes (Minimum age – 18 years old Mean age – 20 years old)	Self-reported questionnaire: - Social Support Questionnaire	<p><i>Social support received at baseline</i></p> <ul style="list-style-type: none"> <li>• Compared with males, fewer female athletes reported relying on coaches for social support</li> <li>• Compared with males, females athletes reported higher levels of satisfaction with social support received from all social support providers, except for coaches</li> </ul> <p><i>Changes in social support received before and after injury</i></p> <ul style="list-style-type: none"> <li>• Both male and female athletes reported relying more on coaches for social support after their injuries</li> <li>• Both male and female athletes reported higher levels of satisfaction with social support provided by coaches after their injuries</li> </ul>

Many studies express the limitation of retrospective analysis and the associated implications for poor recall bias.<sup>15,17,22,23,26,28,37</sup> Longitudinal study designs with presently injured athletes and their coaches, currently engaging in rehabilitation, can assist in addressing this potential limitation,<sup>17,22</sup> while prospective pre- to post-injury designs have also been recommended to avoid this limitation.<sup>28,37</sup> Experimental research designs and methods that do not rely exclusively on athletes and/or coaches self-report (e.g., observational methods) can also address these limitations. What is known is that the coach–athlete dyad is important during an athlete’s rehabilitation. When conflict emerges between injured athletes and coaches, athletes experience an upsurge in stress, which increases their likelihood of re-injury upon RTS.<sup>26</sup> Potentially, when coaches invest time, energy and effort into injured athletes and their rehabilitation, by listening to their concerns and paying interest to their situation, positive coach–athlete relationships can be fostered.<sup>10</sup> Nevertheless, future research exploring the role of coach–athlete dyads during injury rehabilitation is needed to better understand the influence this relationship may have on the differing perceptions of injury rehabilitation support.<sup>26</sup>

## Conclusion

A sum of 27 studies were included for analysis in this scoping review. Despite recent growth in research concerning the psychology of sporting injury, studies examining the role of coaches during rehabilitation following injury are scarce. Sports coaches should be integral providers of social support for injured athletes.<sup>13</sup> Given that sports coaches lack adequate knowledge<sup>17</sup> and competency<sup>11</sup> concerning social support provision to injured athletes, coaches could benefit from education focusing on how they can better support athletes’ rehabilitation from sporting injury. Qualitative, semi-structured interviewing and the quantitative Social Support Questionnaire are commonly used methods for examining the role of coaches during rehabilitation following an athletes’ injury. Factors to consider when exploring coaches’ roles during injury rehabilitation include age and gender of both athlete and coach, the type of sport and level of competition, the athlete’s and coach’s role in the team, and the injury severity and type, as well as the preinjury relationship between the athlete and coach. The major role that coaches play during rehabilitation is providing social support to the injured athlete. This can include the provision of a specific goal-setting program, empowerment in the rehabilitation process, and emotional support. This scoping review suggests that a positive coach–athlete dyadic relationship has the potential to improve an athlete’s psychological readiness to return to sport.


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## ORCID iDs

Theresa L Burgess  <https://orcid.org/0000-0001-9796-2182>

Fraser Carson  <https://orcid.org/0000-0001-9720-8577>

## References

1. Wadey R, Day M, Cavallerio F, et al. Multilevel model of sport injury (MMSI): can coaches impact and be impacted by injury? In: F Cavallerio and L Martinelli (eds) *Professional advances in sports coaching*. New York: Routledge, 2018, pp.336–357.
2. \*Podlog L, Wadey R, Stark A, et al. An adolescent perspective on injury recovery and the return to sport. *Psychol Sport Exerc* 2013; 14: 437–446.
3. Podlog L, Heil J and Schulte S. Psychosocial factors in sports injury rehabilitation and return to play. *Phys Med Rehab Clin* 2014; 25: 915–930.
4. Thelwell RC, Weston NJ, Greenlees IA, et al. Stressors in elite sport: a coach perspective. *J Sports Sci* 2008; 26: 905–918.
5. Thelwell RC, Wagstaff CR, Rayner A, et al. Exploring athletes’ perceptions of coach stress in elite sport environments. *J Sports Sci* 2017; 35: 44–55.
6. Dhillon H, Dhillon S and Dhillon MS. Current concepts in sports injury rehabilitation. *Indian J Orthop* 2017; 51: 529–536.
7. Arvinen-Barrow M and Clement D. A preliminary investigation into athletic trainers’ views and experiences of a multidisciplinary team approach to sports injury rehabilitation. *Athl Train Sports Health Care* 2015; 7: 97–107.
8. \*Podlog L and Dionigi R. Coach strategies for addressing psychosocial challenges during the return to sport from injury. *J Sports Sci* 2010; 28: 1197–1208.
9. Blom LC, Watson JCII and Spadaro N. The impact of a coaching intervention on the coach-athlete dyad and athlete sport experience. *Nova Science Publishers, Inc.* 2011; 1947: 187.
10. \*Podlog L and Eklund RC. Professional coaches’ perspectives on the return to sport following serious injury. *J Appl Sport Psychol* 2007; 19: 207–225.
11. \*Bon M and Doupona M. Occupational specifics of elite female handball players in relation to injury recovery, social support and environmental factors. *Int J Occup Med Environ Health* 2021; 34: 101–110.
12. \*Borg AF, Falzon R and Muscat A. Psychological implications and rehabilitation programmes due to football-related injuries. *Couns Psychother Res* 2021; 21: 882–898.
13. \*Carson F and Polman R. Experiences of professional rugby union players returning to competition following anterior cruciate ligament reconstruction. *Phys Ther Sport* 2012; 13: 35–40.
14. \*Chan DK, Hagger MS and Spray CM. Treatment motivation for rehabilitation after a sport injury: application of the trans-contextual model. *Psychol Sport Exerc* 2011; 12: 83–92.
15. \*Robbins JE and Rosenfeld LB. Athletes’ perceptions of social support provided by their head coach, assistant coach, and athletic trainer, pre-injury and during rehabilitation. *J Sport Behav* 2001; 24: 277.
16. Smith RE, Smoll FL and Ptacek JT. Conjunctive moderator variables in vulnerability and resiliency research: life stress,

## Appendix 2: Scoping review search strategy

	<b>EBSCOhost</b>	<b>PubMED</b>	<b>Scopus</b>
	<i>Databases: Africa-Wide Information, CINAHL, MEDLINE, APA PsycInfo</i>		
<b>Search 1</b>	coach OR coaches  34,961 results	coach OR coaches  28,670 results	coach OR coaches  81,259 results
<b>Search 2</b>	sport injury OR rehabilitation OR injured athlete  1,001,460 results	sport injury OR rehabilitation OR injured athlete  809,536 results	sport AND injury OR rehabilitation OR injured AND athlete  143,931 results
<b>Search 3</b>	social support OR psychological support OR psychosocial support  361,164 results	social support OR psychological support OR psychosocial support  729,294 results	social AND support OR psychological AND support OR psychosocial AND support  2,006,951 results
<b>Search 4</b>	(coach OR coaches) AND (sport injury OR rehabilitation OR injured athlete) AND (social support OR psychological support OR psychosocial support)  <b>214 results</b>	((coach) OR (coaches)) AND (((sport injury) OR (rehabilitation)) OR (injured athlete))) AND (((social support) OR (psychological support)) OR (psychosocial support))  <b>764 results</b>	(coach OR coaches) AND (sport AND injury OR rehabilitation OR injured AND athlete) AND (social AND support OR psychological AND support OR psychosocial AND support) AND (LIMIT -TO (DOCTYPE , "ar")) AND (LIMIT -TO (SRCTYPE,"j"))  <b>1,765 results</b>

Search date: 25 July 2022



**WE NEED**  
**INJURED SPORTS PLAYERS**  
**AND**  
**COACHES COACHING INJURED SPORTS PLAYERS**



**ARE YOU A SPORTS PLAYER BETWEEN  
THE AGES OF 14 AND 19 WITH A  
SEVERE KNEE INJURY?**

**OR**

**ARE YOU A HIGH SCHOOL SPORTS  
COACH INVOLVED WITH AN ATHLETE  
THAT HAS A SEVERE KNEE INJURY?**

**WE NEED YOUR HELP**  
with our research study

This study aims to explore the role of  
the coach-athlete relationship to  
determine its influence on  
rehabilitation following severe knee  
injury

All you will be required to do is  
answer a few questions during an  
interview

Please contact Jamie King, if you are  
interested in taking part or require  
more information: 064 653 1880 /  
jamieking05@gmail.com

\*Severe knee injury - a serious injury to structures of the knee joint, including ligament, meniscus, cartilage or bone damage. Common symptoms include swelling, pain and instability of the knee. In severe cases, the athlete may even hear a tearing or popping sound at the time of the injury.

Appendix 4: Recruitment email to local orthopaedic knee surgeons, physiotherapists, and Groote Schuur's Orthopaedic Outpatient Sports Clinic



**UNIVERSITY OF CAPE TOWN**  
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**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

***The role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes***

Dear Orthopaedic Surgeon / Physiotherapist / Groote Schuur's Orthopaedic Outpatient Sports Clinic

Thank you in advance for taking the time to read this email.

I am a master's student in the division of Physiotherapy at the University of Cape Town. I am conducting a study to explore the role of the coach-athlete relationship to determine how it influences adolescent athletes undergoing rehabilitation from severe knee injury. Severe knee injury is defined as an injury to structures of the knee joint resulting in a time-loss from sport (full training and availability to play matches) of longer than 28 days. All of the information gathered from this study will be used to complete the dissertation component of my MSc in Exercise and Sports Physiotherapy degree. This study has been granted ethical approval by the University of Cape Town's Faculty of Health Sciences Human Research Ethics Committee (HREC REF 257/2022).

Why are you receiving this email?

I am contacting you to ask for your help with participant recruitment. I believe that you would have valuable access to the population I am trying to recruit for my study.

What will you be requested to do?

All that would be needed from you is to pass on the attached recruitment flyer to appropriate applicants that you identify as suitable to take part in this study.

Who am I trying to recruit?

- 1) Adolescent athletes at South African high schools undergoing or just having undergone rehabilitation following severe knee injury
- 2) Sports coaches at South African high schools who are coaching adolescent athletes undergoing or just having undergone rehabilitation following severe knee injury

Inclusion criteria	Exclusion criteria
Male or female.	Insufficient English language proficiency to take part in a basic interview.
Athletes involved in any sport, enrolled at SA high schools, between the ages of 14-19.	Participants not willing to share their full experiences regarding injury rehabilitation.
Coaches must have at least 2 years of experience in sports coaching at high schools.	If the athlete has already fully returned to competitive sport for longer than a month and is no longer involved in rehabilitation protocols.
Athletes may have undergone surgery, or opted for conservative, non-surgical management.	
A healthcare practitioner must have confirmed that the athlete encountered a severe knee injury within the last year. Severe knee injury is defined as an injury to structures of the knee joint resulting in a time-loss from sport (full training and availability to play matches) of longer than 28 days.	

Should you have any further questions, please feel free to contact me or my research supervisor, A/Prof Theresa Burgess, using the following details:

**Jamie King (Student researcher)**

Cell number: 064 653 1880

Email: [jamieking05@gmail.com](mailto:jamieking05@gmail.com)

**A/Prof Theresa Burgess (Supervisor)**

Tel number: 021 406 6171

Email: [theresa.burgess@uct.ac.za](mailto:theresa.burgess@uct.ac.za)

Your willingness to help with this matter is greatly appreciated.

Kind regards,

Jamie King

## Appendix 5: Recruitment email to high school Headmasters / Head of Sport



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

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Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

### ***The role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes***

Dear Headmaster / Head of Sport

Thank you in advance for taking the time to read this email.

I am a master's student in the Division of Physiotherapy at the University of Cape Town. I am conducting a research study to explore the role of the coach-athlete relationship to determine how it influences adolescent athletes undergoing rehabilitation from severe knee injury. Severe knee injury is defined as an injury to structures of the knee joint resulting in a time-loss from sport (full training and availability to play matches) of longer than 28 days. All of the information gathered from this study will be used to complete the dissertation component of my MSc in Exercise and Sports Physiotherapy degree. This study has been granted ethical approval by the University of Cape Town's Faculty of Health Sciences Human Research Ethics Committee (HREC REF 257/2022).

I am writing to you to ask for your assistance in forwarding this email, along with the attachments, to all of the U14-U19 sports coaches at your school in order to facilitate the recruitment of coaches for my study. The coaches will then be asked to please forward the same email, along with the attachments, to the athletes they coach (if they are over the age of 18) or their parent/legal guardian (if they are between the ages of 14 and 18).

Should you have any further questions, please feel free to contact me or my research supervisor, A/Prof Theresa Burgess, using the following details:

**Jamie King (Student researcher)**

Cell number: 064 653 1880

Email: [jamieking05@gmail.com](mailto:jamieking05@gmail.com)

**A/Prof Theresa Burgess (Supervisor)**

Tel number: 021 406 6171

Email: [theresa.burgess@uct.ac.za](mailto:theresa.burgess@uct.ac.za)

Your willingness to help with this matter is greatly appreciated.

Kind regards,

Jamie King

## Appendix 6: Interview guide

Phase	Purpose	Duration	Opening question	Potential prompts/robes
<b>Introduction</b>	<p>Introduce self and allow participant to introduce themselves.</p> <p>Thank participant for their involvement.</p> <p>Explain purpose of the interview.</p> <p>Outline the interview style (conversational approach, emphasis on importance of participants own perspectives, request for participant to do most of the talking, interviewer to use open-ended questions and prompting).</p> <p>Reinforce confidentiality and explain limits.</p> <p>Reinforce that participants have the right to withdraw from the interview at any point without consequence.</p> <p>Verbal consent.</p>	5 min		





Phase	Purpose	Duration	Opening question	Potential prompts/robes
	<p data-bbox="383 651 1010 708">3. The understanding between both members regarding their perceptions of each other's roles in injury rehabilitation.</p> <p data-bbox="383 1034 1043 1091">4. What each member requires from one another to improve the coach-athlete relationship during rehabilitation.</p>		<p data-bbox="1290 229 1599 320">COACH: "What is your role as a coach in rehabilitation from injury?"</p> <p data-bbox="1245 651 1603 772">3. ATHLETE: "What is your coach's role throughout your rehabilitation back to playing sport?"</p> <p data-bbox="1290 852 1592 973">COACH: "What is your player's role throughout their rehabilitation back to playing sport?"</p> <p data-bbox="1245 1050 1576 1171">4. ATHLETE: "What could your coach do to make your rehabilitation back to playing sport better/easier?"</p>	<p data-bbox="1648 229 2018 284">What can you do as a coach to better your athletes' rehabilitation?</p> <p data-bbox="1648 316 2033 406">What is expected of you to make sure your player is ready to return to playing sport?</p> <p data-bbox="1648 432 1984 486">What does it take to rehabilitate a player back into the team?</p> <p data-bbox="1648 512 2011 566">What can you do as a coach to better your athletes' rehabilitation?</p> <p data-bbox="1648 651 1984 705">How does your coach involve themselves in your rehabilitation?</p> <p data-bbox="1648 730 2033 785">What influence does the coach have on your rehabilitation?</p> <p data-bbox="1648 869 2033 924">What does your athlete do during their rehabilitation?</p> <p data-bbox="1648 1050 2033 1141">What would you want from your coach to improve your experience with rehabilitation?</p> <p data-bbox="1648 1166 2033 1257">What does your coach do wrong during your rehabilitation and how can they correct it?</p>

Phase	Purpose	Duration	Opening question	Potential prompts/robes
	<p>5. How coaches and athletes deal with the Return to Sport phase of rehabilitation aiming for successful return to pre-injury performance.</p>		<p>COACH: "What could your athlete do better to make their rehabilitation back to playing sport better/easier?"</p> <p>5. ATHLETE: "How do you ensure that you are ready to return to playing sport again?"</p> <p>COACH: "How do you ensure that your athlete is ready to return to playing sport again?"</p>	<p>What does your coach not do during your rehabilitation and what should they be doing?</p> <p>What would you want from your athlete to improve your experience with their rehabilitation?</p> <p>What does your athlete do wrong during rehabilitation and how can they correct it?</p> <p>What does your athlete not do during rehabilitation and what should they be doing?</p> <p>How do you know you are ready or not ready to return to play?</p> <p>What tests must you complete before returning to play?</p> <p>How does the thought of returning to play make you feel?</p> <p>What would stop you from being ready to return to play?</p> <p>What is your role in deciding when your athlete should return to play?</p>

Phase	Purpose	Duration	Opening question	Potential prompts/robes
				<p>How do you know that your athlete is ready or not ready to return to play?</p> <p>What tests must your athlete complete before returning to play?</p> <p>How does the thought of allowing your athlete to return to play make you feel?</p> <p>What would stop you from allowing your athlete to return to play?</p>
<b>Cool-down</b>	<p>Wrap-up main part of interview.</p> <p>Allow participant opportunity to add any last-minute thoughts.</p>	5 min	"I think we've covered everything from my side. Is there anything else you would like to mention?"	
<b>Closing</b>	<p>Thank participant for their involvement.</p> <p>Explain transcript review process.</p> <p>Reinforce confidentiality and explain limits.</p> <p>Ask about the potential of other suitable candidates to be informed about the study.</p>	5 min		



**UNIVERSITY OF CAPE TOWN**  
**Faculty of Health Sciences**  
**Human Research Ethics Committee**



**Room 45 E-52-E-Floor- Old Main Building**  
**Groote Schuur Hospital**  
**Observatory 7925**

**Telephone** [021] 406 6492

**Email:** [hrec-submissions@uct.ac.za](mailto:hrec-submissions@uct.ac.za)

**Website:** [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms)

13 May 2022

**HREC REF: 257/2022**

**A/Prof T Burgess**

Division of Physiotherapy

F-45 OMB

Email: [Theresa.burgess@uct.ac.za](mailto:Theresa.burgess@uct.ac.za)

Student: [KNGJAM006@myuct.ac.za](mailto:KNGJAM006@myuct.ac.za)

Dear A/Prof Burgess

**PROJECT TITLE : ROLE OF THE DYADIC COACH-ATHLETE RELATIONSHIP IN REHABILITATION FROM ANTERIOR CRUCIATE LIGAMENT INJURY SUSTAINED BY ADOLESCENT RUGBY UNION PLAYERS- (MSC CANDIDATE-MR JAMIE KING)**

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

**This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19. Please refer to guidance letter dated 02 February 2022 on our website:**

**<http://www.health.uct.ac.za/fhs/research/humanethics/forms>**

**Approval is granted for one year until the 30 May 2023.**

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms))

***The HREC acknowledge that the student: Mr Jamie King will also be involved in this study.***

**Please quote the HREC REF 257/2022 in all your correspondence.**

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely



**PROFESSOR M BLOCKMAN**


**CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE**

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2020), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.



### FHS016: Annual Progress Report / Renewal

<b>HREC office use only (FWA00001637; IRB00001938)</b>			
<b>This serves as notification of annual approval, including any documentation described below.</b>			
<input checked="" type="checkbox"/> Approved	Annual progress report	Approved until/next renewal date	30/05/2024
<input type="checkbox"/> Not approved	See attached comments		
Signature Chairperson of the HREC/ Designee			Date Signed 2/5/2023

**Note:** Please email this form and supporting documents (if applicable) in a combined pdf-file to [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za).  
Please clarify your plan for research-related activities during COVID-19 lockdown.  
Please use the latest form found on our website:  
<http://www.health.uct.ac.za/fhs/research/humanethics/forms>

HUMAN RESEARCH  
ETHICS COMMITTEE  
- 2 MAY 2023  
HEALTH SCIENCES FACULTY  
UNIVERSITY OF CAPE TOWN

Comments to PI from the HREC

**Principal Investigator to complete the following:**

**1. Protocol information**

Date (when submitting this form)	30/04/2023		
HREC REF Number	257/2022	Current Ethics Approval was granted until	30 May 2023
Protocol title	Role of the dyadic coach-athlete relationship in rehabilitation following severe knee injury sustained by adolescent athletes		
Protocol number (if applicable)	N/A		
Are there any sub-studies linked to this study?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
If yes, could you please provide the HREC Reference number for all sub-studies? <b>Note:</b> A separate FHS016 must be submitted for each sub-study.			
Principal Investigator	A/Prof Theresa Burgess		



**REFERENCE:** 20220531-2661

**ENQUIRIES:** Mr M Kanzi

Mr Jamie King  
6 General JJ Pienaar Close  
Welgelegen  
7500

**Dear Jamie King,**

**RESEARCH PROPOSAL:** ROLE OF THE DYADIC COACH-ATHLETE RELATIONSHIP IN REHABILITATION FROM ANTERIOR CRUCIATE LIGAMENT INJURY SUSTAINED BY ADOLESCENT RUGBY UNION PLAYERS.

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **31 May 2022 till 30 September 2022**.
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Mr M Kanzi at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Research Services  
Western Cape Education Department  
Private Bag X9114  
CAPE TOWN  
8000**

We wish you success in your research.

Kind regards,  
Meshack Kanzi  
**Directorate: Research**  
**DATE: 31 May 2022**

## Appendix 9: Informed consent form for athletes 18 years and older



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

### ***The role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes***

Dear athlete,

Thank you for reading this form.

I am a physio student at the University of Cape Town (UCT). I am doing a study to explore the bond between an athlete and coach, to see how it affects recovery from severe knee injury in teenagers playing sport. The results will be used for my master's degree. This study has been ethically accepted by UCT's Faculty of Health Sciences Human Research Ethics Committee (HREC REF: 257/2022).

#### **What is this study about?**

An injury is severe when it causes you to miss out on full training and matches for more than 28 days. Severe knee injury is a serious injury to structures of your knee joint. These include ligament, meniscus, cartilage and bone damage. It can happen when your knee twists or bends too far. Sometimes, a tear or pop is heard or felt. You may have pain or swelling, and your knee may not feel stable. These injuries can take long to recover. To help with this, you should do rehabilitation, which is a safe way to improve pain, function and performance. A medical person may give you some exercises to do. Severe knee injury can affect your performance and may cause emotional troubles, which could affect recovery. Your injury may even affect your coach. The close relationship you have with your coach is important in sport. It joins the thoughts, feelings and actions of coaches and athletes, to help both reach happiness, success and better performances.

#### **Why is this study being done?**

Not a lot is known about the role of this relationship in recovery from severe injury. The way injury affects young athletes is different. Yet, not a lot is known about how the emotional side of injury affects recovery in young athletes.

By understanding the effect of this relationship, recovery from injury may be improved. You may have more belief in yourself, and you may have less risk of re-injury, which may improve your performance when playing sport again.

### **Will you be able to take part?**

Any young athlete at a South African high school that is busy with rehabilitation following severe knee injury or just finished with it, will be able to take part as long as:

- You are including and between the ages of 14 and 19 years old
- A medical person has confirmed that you had a severe knee injury in the last year
- You are not finished with rehabilitation or already gone back to playing matches for longer than a month

### **How many people will take part?**

We aim for between 8 and 12 athletes and coaches each, which gives a total of 16-24 people to take part.

### **What will you be asked to do?**

You will be asked to take part in an interview and answer questions about your injury rehabilitation and what effect the relationship with your coach has on playing sport again. These questions will focus on:

- How the injury and rehabilitation affects you emotionally
- What your role is during rehabilitation
- The understanding of how you see your coaches' role in rehabilitation
- What you believe you would want from coaches to improve rehabilitation
- How you deal with the Return to Sport phase of rehabilitation as you try to get back to the same performance levels as you reached before your injury

Dates and times for the meeting will be arranged when you are ready. The interview will be about 1 hour. If you stay in Cape Town, the interview will be done at a place close to where you live, or online, depending on the COVID-19 pandemic. If you stay outside of Cape Town, interviews will be done online. Meetings will be recorded (if you allow) so that all the information is picked up and nothing is missed.

Interviews will be done in English as much as possible, however, you may choose to answer in your own language if you wish. When the interviews are finished, you will get a copy to say if the information is correct before the results are drawn.

**Who will see your interviews?**

Only the student researcher and supervisors will see the interviews. Transcribers will change the recording into writing, so that the information can be explained in the study findings. Your identity will be kept secret, so that the transcribers cannot trace your answers back to you. If you want to take part in this study but your coach does not, you will still be allowed to do so. You will not know if your coach decides to take part. And your coach will not know if you decide to take part.

**How will we protect your data?**

No names or personal information will be used when we present the study findings. However, since we only expect a few people to take part, you might be able to recognize your own answers, mainly if they are presented 'word-for-word'. All the interviews will be stored on a password-protected laptop to keep it safe. Information on the laptop will be stored on a secure data analysis program called NVivo. In the future, the findings from this study could be included in other research.

**Do you have to take part?**

No. This decision is up to you. You will only be allowed to take part if you give informed consent. If you want to leave the study at any point, you will be allowed to do so without any penalty and your information will not be used. Your decision to take part in this study will not affect team selection when playing your sport.

**What are the possible risks of taking part?**

There are little risks with taking part in this study. However, since the interview deals with a potentially sensitive topic which asks you to speak about your thoughts and feelings, it may cause unwanted emotion. If we feel that you may need to see a psychologist, you will be referred, if you are okay with it.

**What are the benefits of taking part?**

There are no direct benefits for taking part in this study. However, when the study is finished, you will get a guide which explains the findings and how your relationship with your coach may affect your injury rehabilitation.

**Will you get any money for taking part?**

You will not get any money if you take part in this study.

**Will you get any food or drinks during the interview:**

Yes. We will provide a healthy snack and water during the interview.

**Will COVID-19 protocols be followed during the interviews that take place in-person?**

Yes. Before you enter the interview venue, we will check your temperature. You will need to fill in a short COVID-19 symptom screening form before the interview begins. If you have a high temperature (more than 37.5 degrees Celsius) or any COVID-19-related symptoms, the interview will be rearranged. During the interview, you will need social distance and wear a mask. You will need to sanitize your hands before and after the interview. The venues surfaces will also be sanitized before and after the interview.

**Who to get hold of if you have any other questions?**

Please feel free to call or email me or my research supervisor, A/Prof Theresa Burgess, using these details:

**Jamie King (Student researcher)**

Cell number: 064 653 1880

Email: [jamieking05@gmail.com](mailto:jamieking05@gmail.com)

**A/Prof Theresa Burgess (Supervisor)**

Tel number: 021 406 6171

Email: [theresa.burgess@uct.ac.za](mailto:theresa.burgess@uct.ac.za)

You can contact UCT's Faculty of Health Science Human Research Ethics Committee on 021 406 6338 or [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za) if you have any other questions about your rights and wellbeing in this study.

**Consent Statement**

I, \_\_\_\_\_, have read the whole informed consent form, and know what is asked of me to take part. I understand the purpose and aim of this study. I confirm that I am able to take part. I allow for the interview to be recorded. I understand that no names or personal information will be used when presenting the study findings. However, I may be able to trace certain answers back to myself as only a small number of responses are expected, and my answers may be presented 'word-for-word'. I understand that the decision to take part or not is up to me. I understand that I am allowed to leave the study at any point, without any penalty. I am aware that my decision to take part or not will be kept a secret. I am aware of the risks and benefits of deciding to take part. I know how and who to contact if I have any other questions.

Please note, by choosing the option to accept, you are agreeing to take part in this study, and give your informed consent.

**I accept the above statement and consent to take part in this study**

**I DO NOT accept the above statement and DO NOT want to take part in this study**

**Participant name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

**Student researcher name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

**Witness name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

## Appendix 10: Informed consent form for coaches



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

### ***The role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes***

Dear coach,

Thank you for taking the time to read this form.

I am a physio student at the University of Cape Town (UCT). I am doing a study to explore the bond between a coach and athlete, to see how it affects recovery from severe knee injury in teenagers playing sport. The results will be used for my master's degree. This study has been ethically accepted by UCT's Faculty of Health Sciences Human Research Ethics Committee (HREC REF 257/2022).

#### **What is this study about?**

An injury is severe when it causes the person to miss out on full training and matches for more than 28 days. Severe knee injury is a serious injury to structures of the knee joint. These include ligament, meniscus, cartilage and bone damage. It can happen when the knee twists and bends too far. Sometimes, a tear or pop is heard or felt. There may be pain or swelling and the knee may not feel stable. These injuries can take long to recover. To help with this, the athlete should do rehabilitation, which is a safe way to improve pain, function and performance. A medical person may give the athlete some exercises to do. Severe knee injury can affect an athlete's performance and may cause emotional troubles, which could affect recovery. This injury may even affect you as a coach. The close relationship you have with your athlete is important in sport. It joins the thoughts, feelings and actions of coaches and athletes, to help both reach happiness, success and better performances.

#### **Why is this study being done?**

Not a lot is known about the role of this relationship in recovery from severe knee injury. The way injury affects young athletes is different. Yet, not a lot is known about how the emotional side of injury affects recovery in young athletes.

By understanding the effect of this relationship, recovery from injury may be improved. The athlete may have more belief in themselves, and they may have less risk of re-injury, which may improve their performance when playing sport again.

### **Will you be able to take part?**

Any sports coach at a South African high school who is coaching a young athlete that is busy with rehabilitation following severe knee injury or just finished with it, will be able to take part as long as:

- They have coached sport at high school level for at least 2 years
- Your athlete has not finished with rehabilitation or already gone back to playing matches for longer than a month
- The young athlete you are coaching is including and between the ages of 14 and 19 years old

### **How many people will take part?**

We aim for between 8 and 12 athletes and coaches each, which gives a total of 16-24 people to take part.

### **What will you be asked to do?**

You will be asked to take part in an interview and answer questions about injury rehabilitation and what effect the relationship with your athlete had on them playing sport again. These questions will focus on:

- How the injury and rehabilitation affects you emotionally
- What your role is during rehabilitation
- The understanding of how you see your athletes' role in rehabilitation
- What you believe you would want from athletes to improve rehabilitation
- How you deal with the Return to Sport phase of rehabilitation as your athlete tries to get back to the same performance levels as they reached before their injury

Dates and times for the meeting will be arranged when you are ready. The interview will be about 1 hour. If you stay in Cape Town, the interview will be done at a place close to where you live, or online, depending on the COVID-19 pandemic. If you stay outside of Cape Town, interviews will be done online. Meetings will be recorded (if you allow) so that all the information is picked up and nothing is missed.

Interviews will be done in English as much as possible, however, you may choose to answer in your own language if you wish. When the interviews are finished, you will get a copy to say if the information is correct before the results are drawn.

**Who will see your interview responses?**

Only the student researcher and supervisors will see the interviews. Transcribers will change the recording into writing, so that the information can be explained in the study findings. Your identity will be kept secret, so that the transcribers cannot trace your answers back to you. If you want to take part in this study but your athlete does not, you will still be allowed to do so. You will not know if your athlete decides to take part. And your athlete will not know if you decide to take part.

**How will we protect your data?**

No names or personal information will be used when we present the study findings. However, since we only expect a few people to take part, you might be able to recognize your own answers, mainly if they are presented 'word-for-word'. All the interviews will be stored on a password-protected laptop to keep it safe. Information on the laptop will be stored on a secure data analysis program called NVivo. In the future, the findings from this study could be included in other research.

**Do you have to take part?**

No. This decision is up to you. You will only be allowed to take part if you give informed consent. If you want to leave the study at any point, you will be allowed to do so without any penalty and your information will not be used. Your decision to take part in this study will not have any negative affect on your coaching in the future.

**What are the possible risks of taking part?**

There are little risks with taking part in this study. However, since the interview deals with a potentially sensitive topic which asks you to speak about your thoughts and feelings, it may cause unwanted emotion. If we feel that you may need to see a psychologist, you will be referred, if you are okay with it.

**What are the benefits of taking part?**

There are no direct benefits for taking part in this study. However, when the study is finished, you will get a guide which explains the findings and how your relationship with your athlete may affect injury rehabilitation and improve performance when they play their sport again.

**Will you get any money for taking part?**

You will not get any money if you take part in this study.

**Will you get any food or drinks during the interview:**

Yes. We will provide a healthy snack and water during the interview.

**Will COVID-19 protocols be followed during the interviews that take place in-person?**

Yes. Before you enter the interview venue, we will check your temperature. You will need to fill in a short COVID-19 symptom screening form before the interview begins. If you have a high temperature (more than 37.5 degrees Celsius) or any COVID-19-related symptoms, the interview will be rearranged. During the interview, you will need social distance and wear a mask. You will need to sanitize your hands before and after the interview. The venues surfaces will also be sanitized before and after the interview.

**Who to get hold of if you have any other questions?**

Please feel free to call or email me or my research supervisor, A/Prof Theresa Burgess, using these details:

**Jamie King (Student researcher)**

Cell number: 064 653 1880

Email: [jamieking05@gmail.com](mailto:jamieking05@gmail.com)

**A/Prof Theresa Burgess (Supervisor)**

Tel number: 021 406 6171

Email: [theresa.burgess@uct.ac.za](mailto:theresa.burgess@uct.ac.za)

You can contact UCT's Faculty of Health Science Human Research Ethics Committee on 021 406 6338 or [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za) if you have any other questions about your rights and wellbeing in this study.

**Consent Statement**

I, \_\_\_\_\_, have read the whole informed consent form, and know what is asked of me to take part. I understand the purpose and aim of this study. I confirm that I am able to take part. I allow for the interview to be recorded. I understand that no names or personal information will be used when presenting the study findings. However, I may be able to trace certain answers back to myself as only a small number of responses are expected, and my answers may be presented 'word-for-word'. I understand that the decision to take part or not is up to me. I understand that I am allowed to leave the study at any point, without any penalty. I am aware that my decision to take part or not will be kept a secret. I am aware of the risks and benefits of deciding to take part. I know how and who to contact if I have any other questions.

Please note, by choosing the option to accept, you are agreeing to take part in this study, and give your informed consent.

**I accept the above statement and consent to take part in this study**

**I DO NOT accept the above statement and DO NOT want to take part in this study**

**Participant name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

**Student researcher name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

**Witness name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

## Appendix 11: Informed consent form for parent/legal guardian of athletes 14-17 years old



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

### ***The role of the coach-athlete relationship during rehabilitation following severe knee injury in adolescent athletes***

Dear parent/legal guardian,

Thank you for taking the time to read this form.

I am a physio student at the University of Cape Town (UCT). I am doing a study to explore the relationship between an athlete and coach, to see how it affects recovery from severe knee injury in teenagers playing sport. The results will be used for my master's degree. This study has been ethically accepted by UCT's Faculty of Health Sciences Human Research Ethics Committee (HREC REF: 257/2022).

For your child to take part in this study, you will need to allow them to, by signing this form, and they will have to confirm that they want to take part, by signing their own form. Your child will only be given the chance to take part in this study if you agree to it.

#### **What is this study about?**

An injury is severe when it causes the person to miss out on full training and matches for more than 28 days. Severe knee injury is a serious injury to structures of the knee joint. These include ligament, meniscus, cartilage and bone damage. It can happen when their knee twists and bends too far. Sometimes, a tear or pop is heard or felt. Your child may have pain or swelling, and their knee may not feel stable. These injuries can take long to recover. To help with this, they should do rehabilitation, which is a safe way to improve pain, function and performance. A medical person may give your child some exercises to do. Severe knee injury can affect their performance and may cause emotional troubles, which could affect their recovery. This injury may even affect their coach. The close relationship your child has with their coach is important in sport. It joins the thoughts, feelings and actions of coaches and athletes, to help both reach happiness, success and better performances.

### **Why is this study being done?**

Not a lot is known about the role of this relationship in recovery from severe knee injury. The way injury affects young athletes is different. Yet, not a lot is known about how the emotional side of injury affects recovery in young athletes. By understanding the effect of this relationship, recovery from injury may be improved. Your child may have more belief in themselves, and they may have less risk of re-injury, which may improve their performance when playing sport again.

### **Will your child be able to take part?**

Any young athlete at a South African high school that is busy with rehabilitation following severe knee injury or just finished with it, will be able to take part as long as:

- They are including and between the ages of 14 and 19 years old
- A medical person has confirmed that they had a severe knee injury in the last year
- They are not finished with rehabilitation or already gone back to playing matches for longer than a month

### **How many people will take part?**

We aim for between 8 and 12 athletes and coaches each, which gives a total of 16-24 people to take part.

### **What will your child be asked to do?**

They will be asked to take part in an interview and answer questions about their injury rehabilitation and what effect the relationship with their coach has on playing sport again. These questions will focus on:

- How the injury and rehabilitation affects them emotionally
- What their role is during rehabilitation
- The understanding of how they see their coaches' role in rehabilitation
- What they believe they would want from coaches to improve rehabilitation
- How they deal with the Return to Sport phase of rehabilitation as they try to get back to the same performance levels as they reached before their injury

Dates and times for the meeting will be arranged when they are ready. The interview will be about 1 hour. If they stay in Cape Town, the interview will be done at a place close to where they live, or online, depending on the COVID-19 pandemic. If they stay outside of Cape Town, interviews will be done online. Meetings will be recorded (if you and your child allow) so that all the information is picked up and nothing is missed. Interviews will be done in English as much as possible, however, they may choose to answer in their own language if they wish. When the interviews are finished, your child will get a copy to say if the information is correct before the results are drawn.

### **Who will see your child's interview responses?**

Only the student researcher and supervisors will see the interviews. Transcribers will change the recording into writing, so that the information can be explained in the study findings. Your child's identity will be kept secret, so that the transcribers cannot trace their answers back to them. If you allow, and your child wants to take part in this study, but their coach does not, your child will still be allowed to do so. Your child will not know if their coach decides to take part. And their coach will not know if you allow, and your child decides to take part.

### **How will your child's data be protected?**

No names or personal information will be used when we present the study findings. However, since we only expect a few people to take part, your child might be able to recognize their own answers, mainly if they are presented 'word-for-word'. All the interviews will be stored on a password-protected laptop to keep it safe. Information on the laptop will be stored on a secure data analysis program called NVivo. In the future, the findings from this study could be included in other research.

### **Does your child have to take part?**

No. This decision is up to you and your child. Your child will only be allowed to take part if you give informed consent, and they provide their own informed assent. If you want your child to leave the study at any point, or if they want to leave, this will be allowed without any penalty and the information will not be used. Your and your child's decision to take part in this study will not affect team selection when playing their sport.

**What are the possible risks of taking part?**

There are little risks with taking part in this study. However, since the interview deals with a potentially sensitive topic which asks your child to speak about their thoughts and feelings, it may cause unwanted emotion. If we feel that your child may need to see a psychologist, they will be referred, if you and your child are okay with it.

**What are the benefits of taking part?**

There are no direct benefits for taking part in this study. However, when the study is finished, your child will get a guide which explains the findings and how their relationship with their coach may affect their injury rehabilitation.

**Will you or your child get any money for taking part?**

You or your child will not get any money if they take part in this study.

**Will your child get any food or drinks during the interview?**

Yes. We will provide a healthy snack and water during the interview.

**Will COVID-19 protocols be followed during the interviews that take place in-person?**

Yes. Before they enter the interview venue, we will check your child's temperature. They will need to fill in a short COVID-19 symptom screening form before the interview begins. If your child has a high temperature (more than 37.5 degrees Celsius) or any COVID-19-related symptoms, the interview will be rearranged. During the interview, they will need social distance and wear a mask. They will need to sanitize their hands before and after the interview. The venues surfaces will also be sanitized before and after the interview.

**Who to get hold of if you have any other questions?**

Please feel free to call or email me or my research supervisor, A/Prof Theresa Burgess, using these details:

**Jamie King (Student researcher)**

Cell number: 064 653 1880

Email: [jamieking05@gmail.com](mailto:jamieking05@gmail.com)

**A/Prof Theresa Burgess (Supervisor)**

Tel number: 021 406 6171

Email: [theresa.burgess@uct.ac.za](mailto:theresa.burgess@uct.ac.za)

You can contact UCT's Faculty of Health Science Human Research Ethics Committee on 021 406 6338 or [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za) if you have any other questions about your child's rights and wellbeing in this study.

**Consent Statement**

I, \_\_\_\_\_, parent/legal guardian of, \_\_\_\_\_ have read the whole informed consent form, and know what is asked of my child to take part. I understand the purpose and aim of this study. I confirm that my child is able to take part. I allow for my child's interview to be recorded. I understand that no names or personal information will be used when presenting the study findings. However, my child may be able to trace certain answers back to themselves as only a small number of responses are expected and their answers may be presented 'word-for-word'. I understand that the decision to take part or not is up to me and my child. I understand that my child is allowed to leave the study at any point, without any penalty. I am aware that my decision to take part or not will be kept a secret. I am aware of the risks and benefits of deciding to let my child take part. I know how and who to contact if I have any other questions.

Please note, by choosing the option to accept, you are agreeing to allow you child to take part in the study, and give your informed consent.

**I accept the above statement and consent to my child participating in this study**

**I DO NOT accept the above statement and DO NOT want my child to take part**

**Participant's parent/legal guardian name and surname:**

**Signature:**

\_\_\_\_\_  
**Date:**

**Student researcher name and surname:**

**Signature:**

\_\_\_\_\_  
**Date:**

**Witness name and surname:**

**Signature:**

\_\_\_\_\_  
**Date:**

## Appendix 12: Informed assent form for athletes aged 14-17 years old



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

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To take part in this study, you will need to say that you want to, and your parent/legal guardian will need to let you take part. Remember, even if your parent/legal guardian wants you to take part, this does not mean that you have to. This decision is still up to you.

For you to say that you want to take part, you will need to carefully read this form and sign at the end. Please ask questions about anything that you are not sure of before signing. You can ask your parents if you do not understand anything. If they cannot answer your questions, then please feel free to ask me anything.

#### **What is this study about?**

An injury is severe when it causes you to miss out on full training and matches for more than 28 days. Severe knee injury is a serious injury to structures of your knee joint. These include ligament, meniscus, cartilage and bone damage. It can happen when your knee twists and bends too far. Sometimes, a tear or pop is heard or felt. You may have pain or swelling, and your knee may not feel stable. These injuries can take long to recover. To help with this, you should do rehabilitation, which is a safe way to improve pain, function and performance. A medical person may give you some exercises to do. Severe knee injury can affect your performance and may cause emotional troubles, which could affect recovery.

Your injury may even affect your coach. The close relationship you have with your coach is important in sport. It joins the thoughts, feelings and actions of coaches and athletes, to help both reach happiness, success and better performances.

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Any young athlete at a South African high school that is busy with rehabilitation following severe knee injury or just finished with it, will be able to take part as long as:

- You are including and between the ages of 14 and 19 years old
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### **What will you be asked to do?**

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- How the injury and rehabilitation affects you emotionally
- What your role is during rehabilitation
- The understanding of how you see your coaches' role in rehabilitation
- What you believe you would want from coaches to improve rehabilitation

- How you deal with the Return to Sport phase of rehabilitation as you try to get back to the same performance levels as you reached before your injury

Dates and times for the meeting will be arranged when you are ready. The interview will be about 1 hour. If you stay in Cape Town, the interview will be done at a place close to where you live, or online, depending on the COVID-19 pandemic. If you stay outside of Cape Town, interviews will be done online. Meetings will be recorded (if you allow) so that all the information is picked up and nothing is missed. Interviews will be done in English as much as possible, however, you may choose to answer in your own language if you wish. When the interviews are finished, you will get a copy to say if the information is correct before the results are drawn.

### **Who will see your interviews?**

Only the student researcher and supervisors will see the interviews. Transcribers will change the recording into writing, so that the information can be explained in the study findings. Your identity will be kept secret, so that the transcribers cannot trace your answers back to you. If you want to take part in this study but your coach does not, you will still be allowed to do so. You will not know if your coach decides to take part. And your coach will not know if you decide to take part.

### **How will we protect your data?**

No names or personal information will be used when we present the study findings. However, since we only expect a few people to take part, you might be able to recognize your own answers, mainly if they are presented 'word-for-word'. All the interviews will be stored on a password-protected laptop to keep it safe. Information on the laptop will be stored on a secure data analysis program called NVivo. In the future, the findings from this study could be included in other research.

### **Do you have to take part?**

No. This decision is up to you. You will only be allowed to take part if you give informed assent. If you want to leave the study at any point, you will be allowed to do so without any penalty and your information will not be used. Your decision to take part in this study will not affect team selection when playing your sport.

**What are the possible risks (downsides/negatives) of taking part?**

There are little risks with taking part in this study. However, since the interview deals with a potentially sensitive topic which asks you to speak about your thoughts and feelings, it may cause unwanted emotion. If we feel that you may need to see a psychologist, you will be referred, if you are okay with it.

**What are the benefits (upsides/positives) of taking part?**

There are no direct benefits for taking part in this study. However, when the study is finished, you will get a guide which explains the findings and how your relationship with your coach may affect your injury rehabilitation.

**Will you get any money for taking part?**

You will not get any money if you take part in this study.

**Will you get any food or drinks during the interview?**

Yes. We will provide a healthy snack and water during the interview.

**Will COVID-19 protocols be followed during the interviews that take place in-person?**

Yes. Before you enter the interview venue, we will check your temperature. You will need to fill in a short COVID-19 symptom screening form before the interview begins. If you have a high temperature (more than 37.5 degrees Celsius) or any COVID-19-related symptoms, the interview will be rearranged. During the interview, you will need social distance and wear a mask. You will need to sanitize your hands before and after the interview. The venues surfaces will also be sanitized before and after the interview.

**Who to get hold of if you have any other questions?**

Please feel free to call or email me or my research supervisor, A/Prof Theresa Burgess, using these details:

**Jamie King (Student researcher)**

Cell number: 064 653 1880

Email: [jamieking05@gmail.com](mailto:jamieking05@gmail.com)

**A/Prof Theresa Burgess (Supervisor)**

Tel number: 021 406 6171

Email: [theresa.burgess@uct.ac.za](mailto:theresa.burgess@uct.ac.za)

You can contact UCT's Faculty of Health Science Human Research Ethics Committee on 021 406 6338 or [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za) if you have any other questions about your rights and wellbeing in this study.

### Assent Statement

I, \_\_\_\_\_, have read the whole informed assent form, and know what is asked of me to take part. I understand the purpose and aim of this study. I confirm that I am able to take part. I allow for the interview to be recorded. I understand that no names or personal information will be used when presenting the study findings. However, I may be able to trace certain answers back to myself as only a small number of responses are expected, and my answers may be presented 'word-for-word'. I understand that the decision to take part or not is up to me. I understand that I am allowed to leave the study at any point, without any penalty. I am aware that my decision to take part or not will be kept a secret. I am aware of the risks (downsides/negatives) and benefits (upsides/positives) of deciding to take part. I know how and who to contact if I have any other questions.

Please note, by choosing the option to accept, you are agreeing to take part in this study, and give your informed assent.

I accept the above statement and give assent to take part in this study

I DO NOT accept the above statement and DO NOT want to take part in this study

**Participant name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

**Student researcher name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

**Witness name and surname:**

**Signature:**

\_\_\_\_\_

\_\_\_\_\_

**Date:**

# THE ROLE OF THE COACH-ATHLETE RELATIONSHIP DURING REHABILITATION FOLLOWING SEVERE KNEE INJURY IN ADOLESCENT ATHLETES



## MAIN FINDINGS ON

### COACH-ATHLETE RELATIONSHIPS DURING REHABILITATION:

- Athletes need support from coaches during rehabilitation to overcome any emotional challenges linked with injury recovery. Coach-athlete relationships weaken as coaches do not provide enough support to injured athletes. Coaches require more knowledge on how to help injured athletes during rehabilitation.
- Coaches should adopt a 'Team Approach' to support injured athletes during rehabilitation, by working alongside athletes, and their physiotherapists and parents. Schools should allow for safe, regular coach-athlete interactions.
- Including injured athletes in the team, prioritising coach-athlete interactions, and considering a person-centered stance, may improve coach-athlete relationships.

### INFLUENCES OF POSITIVE COACH-ATHLETE RELATIONSHIPS DURING REHABILITATION:

1

EXPERIENCES WITH INJURY RECOVERY

may improve

2

EASIER INTEGRATION FOR ATHLETES

back into the team

3

RETURN TO SPORT PERFORMANCE

may improve



### SEVERE KNEE INJURY = DEVASTATING

Prolonged intense rehab is needed for successful return to sport



### INJURED ADOLESCENT ATHLETES

- Inexperienced with injury rehab
- Emotionally sensitive
- Self-confidence issues
- Anxiety related to return to sport and fear of re-injury



### HIGH SCHOOL SPORTS COACHES

- Don't provide enough quality support
- Occupied with additional commitments
- Often inexperienced or lack training to assist with injury rehab
- Prioritise team above injured athletes