

Facilitating Social Support during the Transition of Sports Injury Recovery: A Systematic Review

Nikhilraj Kola*, Naga Seema

Centre for Health Psychology, School of Medical Sciences, University of Hyderabad, Gachibowli, Hyderabad, Telangana-500046, India

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Abstract Physical activity is considered a daily routine, and many young people have involved themselves in physical activity as a passion for practising it due to its numerous health benefits. On a larger perspective, athletes invest a lot of energy and time in bringing out optimal performance; hence physical ramifications such as injuries are more evident. The most common cause of injury is overuse of body parts and associated factors. Injury is often seen as a stressful situation that impacts the athletes' ability to handle it physiologically and psychologically. Athletes' physical recovery tends to be highly affected by the individual's psychological response to injury through the different rehabilitation phases. It varies depending on the type of injury, the extent of discomfort, physical symptoms, and the mental status of athletes. However, there is an increase in research reporting athletes' injuries in various contexts. The present review highlights the importance of social support, which enhances an athlete's motivation and ability to handle psychological distress during rehabilitation. Psychological readiness was shown to be a key factor. The integrated/interactive approach of bio-psycho-social factors of the study not only limits understanding of the athletes' injury but also encourages researchers, athletes, and coaches to raise new questions and improve the understanding of the concept along with designing interventions which are essential to perform at a higher level of sports competitions.

Keywords Sports Injury, Rehabilitation, Social Support, Psychological Readiness

1. Introduction

The relevance of sports for youth development is irrefutable worldwide [1]. However, playing sports is synonymous with sustaining one or the other type of injury. Young people participating in sports are most likely to get injured, especially adolescent elite athletes participating in competitive sports [2]. The most common cause of many injuries is overusing a body part while engaging in an activity. Furthermore, sports injuries occur during organised sports, training sessions, fitness activities, or competitions. Injury has been defined as "any physical complaint resulting from training or match, sustained by the player irrespective of sports activity time loss or the need for medical care" [3]. Sports-related injuries are often a significant barrier to continuing any physical activity. A study showed that the prevalence of injuries within 12 months, one or more injuries were reported by 19.3% of children and 18.4% of adults [4]. Similarly, studies on athletes in Delhi and West Bengal in India have shown the highest prevalence rates in psychological and physiological impacts of sports injuries compared to other countries. Sports injuries affect injured athletes' physiological, emotional, and social well-being. Physiological effects on well-being can be a pain, rehabilitation, physical changes in athletes' bodies, and temporary or permanent physical restrictions. Psychological factors are primarily neglected

in sports injury considerations [5]. Effect on emotional well-being includes trauma, feelings of loss, and grief. Social well-being involves dependency on others, isolation from family and friends, new relationships, and likely loss of social roles. Also, self-concept has an impact, including a lack of control, trying to handle altered self-image, challenges to important life goals and values, and the need for stress-free decision-making [6].

A model of sports injury rehabilitation from a holistic perspective explains that recovery after an injury occurs in a complex matrix containing biological, psychological, and social factors [7]. The importance of social support in any stress-mediated situation has been established by research and is extensively used in practice. In the sports context, social support is the essential belongingness and assurance needed to maintain flow states [8] and overcome adversities. Social support has been identified as a stress reducer, self-confidence builder, and performance enhancer among athletes [9,10]. Also, social support is defined as verbal and nonverbal communication between recipients and providers that reduces uncertainty about the situation, the self, the other, or the relationship, and functions to enhance the perception of personal control in one's experience." [11]. Social support is integral to coping and rehabilitation as it impacts the injured athlete's response to injury. It mediates injury rehabilitation as a shield or buffer against negative stressors [12] and directly affects cognitive, emotional, and behavioural injury appraisal [10]. Social support can be multifaceted for the injured athlete in the form of emotional, motivational, informational, technical, and tangible support. It can encompass resources for acquiring active listening, personal assistance, medical assistance, information, etc., from family, friends, team members, sports medicine professionals, coaches, and trainers [13]. For example, an injured athlete who has someone to help with daily life chores, friends, or family for emotional support, or has informational support from a sports physician, will feel less frustrated, more emotionally capable, and adhere better to the recovery process. Any athlete who experiences a conducive supporting environment will adhere better to the rehabilitation [13]. The present review is systematically organised under the following headings: Impact of injury on athlete mental state, psychological rehabilitation of injured athlete, and the impact of social support on recovery and return to play stage.

Impact of Injury on Athlete's Mental State

The studies on sports injury stated that any athletic injury had propounded psychological implications for mental health in the form of anxiety, depression, distress, fear, lower self-esteem, and anger [14,15]. Similarly, injured athletes can even face a sense of loss in identity and competitiveness. The athlete's initial experience of injury or seriously injured competitive athletes may be at a high risk of experiencing mood disturbances as they struggle to

grasp the severity of the injury, future rehabilitation, and return process [14]. The burden of such functional loss or inability to participate in the team can negatively affect athletes' emotional, behavioural and cognitive coping with injuries [16]. Sports injury disrupts an athlete's way of living by creating an imbalance and inculcating loss of not only health but also of their athletic potential. Injured athletes may struggle to deal with daily life hassles due to immobility, adding to the stress. The rehabilitation process and the ability to return to competition are slowed by such responses [17,19]. Consequently, how an athlete deals with future injuries, rehabilitation, and returns to sports is also affected. In the phase of injury experience, an athlete benefits maximum from emotional support, listening support and material aid [transportation, household chores, financial etc.] which provides immeasurable assistance [13].

It becomes paramount for sports professionals to help the injured athlete identify meaningful support sources. Sports medicine professionals must know whether the injured athletes cope in isolation or have a strong support network during a mental health crisis.

Psychological Rehabilitation of Injured Athletes

Injury has its effect not only on a physical level but also affects the athlete's entire body and mind [19]. The Psychological burden will interfere with rehabilitation and hinder the recovery process or even prolong the return to the play stage [20]. Rehabilitation aims to make an athlete reach their prior levels of potentiality and functioning through physical rehabilitation, focusing much on damaged areas of the body; however, studies show that psychological factors play a crucial role in the rehabilitation process [21,22]. The injured athlete may face setbacks, emotional disconnect from the team, or even identity crises at this stage. Injured athletes with difficulty adjusting to the injury will likely experience low motivation and non-adherence to the rehabilitation process. On the other hand, athletes who are successful in managing psychological stress are likely to show adherence to rehabilitation [13]. A study reported that athlete motivation is vital in adherence to the rehabilitation process [23]. Overcoming psychological barriers involved in rehabilitation can be difficult for the athlete alone. Hence professional assistance is necessary [24]. Injury can have adverse effects if rehabilitation is delayed. It can cause lifelong physical or psychological problems or even a condition of not recovering from injury. In this rehabilitation phase, it is paramount to provide the injured athlete with emotional, challenging, motivational, and technical support that directly influences treatment adherence [13]. It is also essential to have effective communication by sports medicine professionals to build trust and rapport with injured athletes, which has the potential to enhance rehabilitation adherence and ultimately will induce motivation which helps in the overall

recovery process [25].

Impact of Social Support on Recovery

Social support during rehabilitation is crucial and may be more detailed than before the injury. Rehabilitation adherence is strongly predicted by perceived social support; the athletic trainer becomes the primary social support mechanism during the rehabilitation process [21]. Social support contributes to reducing harmful effects on psychological feelings and sports-injury issues [26]. Social support allows an athlete to cope with various injury-related stressors [12]. The support of teammates, trainers, and coaches is vital to avert any feeling of identity loss or negative self-worth for the injured athlete. The nature of the unique relationship built between the coach and athlete throughout the rehabilitation process has been explored. A coach-and-athlete relationship is a platform where both parties cooperate and communicate to accomplish goals and success [27]. An athlete's sense of belonging, self-identity, and self-worth, including being cared for by the coach, is fostered by the concept of social support. The time spent together renders a unique quality to athletic-trainer relationships that can lead to adherence to rehabilitation protocols among injured athletes [28,29]. Also, family and friends are crucial in providing emotional and listening support; conversely, teammates and coaches support technical appreciation, technical challenge and shared social reality [7]. It is important to note that social support can negatively affect the athlete's well-being if provided inefficiently or insufficiently. Athletes' negative perception of the support provided hampers with the recovery process. Lack of concern, insensitiveness, inadequate guidance, and support leads to unproductive rehabilitation [15]. Thus, it is imperative for the people involved to be aware of their resourcefulness in supporting the injured athlete during the rehabilitation process.

Readiness to Play

Athletes' physical recovery tends to be highly affected by the individual's psychological response to injury throughout the rehabilitation process. Athletes' initial return to the competition phase is marked by frustration caused by lower perceived confidence and competence than in the pre-injury state [30]. The feelings of nervousness, hesitation, insecurity, anxiety, holding back, fear of re-injury, body protection, half attempts, and caution about injury-inducing situations are apparent at the return to play stage; also, the ability to return to sports and perceived severity is affected by negative thoughts such as shock, anger, and hysteria [31]. These actions often lead to reduced performance and satisfaction; therefore, assessing if fear exists before the athlete returns to a sport during the phase of returning to the sport [32] is imperative. While athletes read themselves to play again, their confidence and anxiety concerns can be addressed with appropriate esteem

support and reassurance. Research suggests that returning to competition after an injury is challenging for an athlete [33]. Hence during the return stage, the coach's assistance in rebuilding confidence for matches, overcoming fear of future injuries, setting realistic performance goals, and reassuring capabilities are highly valued from an injured athlete's point of view [34]. Thus, social support strategies are provisioned to promote returning to sports athletes' sense of relatedness or affiliation.

Rationale

The current literature indicates that research done on injury perceptions, rehabilitation process, and provision of social support among injured athletes recovery found a positive correlation with social support in enhancing the overall recovery process of an injured athlete. However, the literature suggests a need for additional research to explore bio-psycho-social factors in dealing with recovery and psychological readiness among injured athletes. Most of the studies in the present literature have narrowed down to specific elements of the recovery process; thus, the current review is likely to consider a holistic approach to studying the injury recovery process and sort to highlight the impact of social support in every phase of the recovery process.

2. Method

The study followed a five-stage methodological framework [35] to identify the research question, identify the literature, select the study, draft the data, outline the data and report the data.

Stage 1: Formulate the research question. The review addressed how social support impacts the psychological response, Rehabilitation outcome, and psychological readiness among injured athletes.

Stage 2: Review of relevant literature. The relevant literature has been identified using key terms such as sports injury, Psychological Response, Rehabilitation outcomes, injured athletes, Psychological Readiness, social support, and rehabilitation. The studies were mainly identified from search engines like Google Scholar, PsycINFO, and Research gate.

Stage 3: Study selection. The search strategy for studies is based on the keywords such as the psychological impact of injury, rehabilitation, social support, and psychological readiness. The identified studies were scrutinised using inclusion and exclusion criteria. The criteria for inclusion of the selected studies were language, period [2007-2018], and full-length published articles based on empirical works. The exclusion criteria have been performed based on the language used in publications other than English, review papers, and publications only with the abstracts. The second step was to remove the replicated studies.

Stage 4: Charting the data. The review has been extracted from the selected studies in a structured table; the

data extracted from each study was based on authors, year, variables studied, sample characters, method, and critical findings. All the data were obtained only from fully available studies.

Stage 5: Summarising the findings and collating the data based on the studies' themes. The themes were decided based on the variables of the current review.

Study Characteristics

The total number of studies was 22 full-length articles; 12 studies have adopted the qualitative methods; Descriptive method [26], Interview method [36,37], in-depth interviews [38], Prospective observational study [39] FGD & interview methods [40,41], structured interviews [42–44]. Consensual Qualitative Research [45]. Hypothetical injury scenarios are shared and analysed [30], and nine studies adopted quantitative methods of Survey Design [20,46–50], Cohort study [46], Case-control study, and level of evidence [47] and one study has adopted a mixed-methods approach [48].

Participant Characteristics

The review was found on studies that have recruited participants with different types of injury such as anterior cruciate ligament tears, shoulder dislocations [37], chronic & acute injuries [36], dislocated knee, Judo dislocated knee, strained hamstring, torn shoulder labrum, torn ACL, sprained ankle and meningitis, broken ankle, pneumonia, ruptured ACL, AC joint separation, torn hamstring, shoulder impingement, syndrome [45]. ACL reconstruction [41,42,47,49], concussion injuries, orthopaedic injuries [50], ACL reconstruction [49], operative knee surgery [20], meniscus tear, anterior/posterior cruciate ligament tear, kneecap/patella injury [49], shoulder & knee injuries [42], Sprain, Strain, Concussion, Fracture, Contusion/bruise, Dislocation [46] Contusion of the foot, a torn anterior cruciate ligament, sprained ankles, strained back, a torn meniscus, separated shoulder, strained back, and stress fracture [38].

Results

Through the systematic review process of identification, inclusion, exclusion, and after removing duplicates, the final number of included studies is 22.

Key Findings

The above studies have found that Athletic performance is limited by sports injury [41]. As it impacts perceptions and rehabilitation outcomes negatively [26]. Athletes' mental health is essential in injury and rehabilitation [51].

Literature on mental health and rehabilitation found that an athlete's cognitive appraisal is crucial in determining injury-associated factors [38]. Studies found that injury

perceptions and psychological readiness are connected with athletes' autonomy, relatedness, and competence in the athlete's [41]. Furthermore, lack of confidence among injured athletes, fear of injury, weakness, and decreased movement are key factors in dealing with Psychological readiness among injured athletes [47].

Social support found that social support plays a crucial role in the injury and rehabilitation process. Creating opportunities and discussing the recovery process help the athlete recover soon [44]. Identified coping strategies such as inducing self-talk and goal setting are most effective in dealing with injury and rehabilitation outcomes [45]. Athletes' confidence level, realistic expectations of capabilities, trust in rehabilitation providers, and motivation levels will impact their Psychological readiness. Similarly, facilitating motivation and higher motivational levels through social support will facilitate a return to the play stage [49]. Studies also found that social support from athletic trainers acts as a buffering effect which benefits psychological recovery, rehabilitation process, and returns to the play stage, and also determines the well-being of the athletes [46]. Studies found that strength conditioning coaches' sources of social support efficiently deal with injury-associated responses [52].

3. Discussion

The review aimed to explore the related literature available on the impact of social support on sports injuries, rehabilitation, and readiness of injured athletes. The studies included in the review emphasise how social support will contribute to perceptions of injury and facilitate the recovery process and psychological readiness among injured athletes. The findings suggest significant evidence of social support on injured athletes' perceptions, rehabilitation outcomes and psychological readiness.

The systematic review found an enormous impact on athletes' mental health in dealing with an injury [26]. The injured athletes' mental perception changes towards injury and rehabilitation. It is emphasised that understanding mental health status is primary in coping with injury and rehabilitation [21]. At this stage, social support plays a crucial role; it facilitates coping among injured athletes and helps motivate them throughout the rehabilitation process [37]. Further, the review identified factors such as low levels of athletic identity and masculinity hamper coping with injury [51]. Competence, autonomy [36], and injury perception [43,44] affect athletes' recovery and return to sports. In addition, confidence, fear of re-injury [43,49], and level of motivation [41,45] will impact psychological readiness. Though the injury is primarily physiological, however psychological and social factors play a crucial role in the recovery process; therefore, a holistic understanding of the physical and psychosocial factors is paramount in understanding the factors associated with injury [42] and essential in developing interventions for sports injury

prevention and rehabilitation [42,54].

Considering all the potential bio-psycho-social factors of the recovery process, Social support has been researched and reviewed as the strengthening pillar of rehabilitation and coping through identifying the coping strategies, goal setting, and injury perceptions [50]. Given the focus on social support, the literature revealed that greater satisfaction with social support enhances an athlete's motivation and ability to handle psychological distress during rehabilitation [50]. Also, studies indicate that social support found through situational characteristics and social networks directly impacts injury rehabilitation [45]. Athlete social networks such as teammates, coaches, and trainers are crucial in injury recovery. The literature findings support that athletic peers are a buffer for physical and psychological recovery [46].

Similarly, social support from a coach effectively reduces the negative experience of injury & cultivates rehabilitation adherence [55]. It was also found that the motivational aspects are crucial for athletes' successful rehabilitation and well-being among injured athletes [26,30,51]. Findings also imply that buffering effect of social support from Athletic trainers is beneficial in successful recovery from injury and return to the play stage [46]. Further exploring the literature, it was found that targeted social support from the staff, such as talking about recovery and educating sports professionals on the need for social support, will benefit athletes recovering from injury and the rehabilitation process [44]. Finally, the literature on social support revealed that involving athletes in injury education and making resources available lead to better rehabilitation outcomes [48]. In addition, Yang et al. [56] state that coaches must be equipped with interventional strategies to support injured athletes. Uncovering that social support influences rehabilitation outcomes through gender perspectives as well [40].

4. Conclusions

Sports injury has profound negative impacts on athletes' psychological perception, rehabilitation beliefs and psychological readiness. Social support is found to be a potential factor in mitigating the negative impacts and helps the athlete to cope with an injury and associated factors. Social support was a key factor in determining the athlete's negative perceptions, rehabilitation process and psychological readiness.

Implications of the Proposed Study

The research is relatively new in this field and has several important implications for athletes, sports psychologists, physiotherapists, coaches, parents, and researchers. This study is remarkable to the participants who are into practising sports or competitive sports. The study highlights and describes in the context of the cognitive, conative, and affective process, that is, Psychological distress of injury, Rehabilitation beliefs and Psychological readiness outlined, and the importance of social support, which enhances an athlete's motivation and ability to handle psychological distress during recovery was shown to be a key factor. The integrated/interactive approach of bio-psycho-social factors of the study not only begins to understand the athletes' injury but also an in-depth understanding of athletes' Mental Health, also this review will encourage researchers, athletes, and coaches to raise new questions and improve the knowledge of the concept and also to design interventions which are essential for the athletes to perform at a higher level of sports competitions.

Limitations & Future Directions

The above studies tried to establish a relation between social support and injury-associated factors /consequences; however, most studies have a narrow approach to studying social support and sports injury. The studies focused on social support linking it to either injury consequence, rehabilitation outcome, or psychological readiness rather than the holistic approach to injury recovery. Also, studies could have considered the level of the sport of an injured athlete along with the stage in which the injury has occurred (e.g. preparatory phase, pre-competition (pre-season) phase, competition (season) phase, and transition (off-season) phase). Since social support heavily emphasises demographic factors, studies did not consider any personal or social factors in providing social support to the injured athlete. Similarly, the studies also couldn't intervene much in the types of social support to be provided, preferably at the time of injury and recovery phase.

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Appendix

	Reference	Variables studied	N	Design	Key findings
1	Clement D, Shannon VR. 2011	Injury Perceptions Social support	49	Descriptive	Injury often influence negatively on athlete's experience of injury & Rehabilitation There is the positive impact of social support received by the ATC on the rehabilitation and wellbeing of athletes
2	Masten R, Stražar K, Žilavec I, Tušak M, Kandare M. 2014	Psychological Response to injury Rehabilitation beliefs Pain Coping Athletic Identity	68	Survey Design	Low level of athletic identity and masculinity leads to difficult to cope with post injury consequences, for successful rehabilitation the coach support and motivation is essential in adjusting with difficulties
3	Podlog L, Eklund RC. 2007	Psychological Readiness	12	Interview method	In return to sport, athletes relatedness, connectedness autonomy were noted as important factors along with self control over circumstances
4	Podlog L, Wadey R, Stark A, Lochbaum M, Hannon J, Newton M. 2013	injury recovery and return-to-sport	11	Interview method	athlete experiences of injury perceptions and success in return to sports are connected with autonomy, relatedness and competence of athlete
5	Von Rosen P, Kottorp A, Frid Ć C, Frohm A, Heijne A. 2018	Injury perceptions and experiences	340	mixed-method study	The findings support several suggestions that may improve the rehabilitation process and enhance rehabilitation outcomes by evaluating the factors related to athletic identity, injury consequences, rehabilitation and coping with pain.
6	Masten R, Stražar K, Žilavec I, Tušak M, Kandare M. 2014	Coping with pain (SIP 15), rehabilitation behaviours (SIRBS), motivation for rehabilitation, anxiety (STAI X1) and social support.	68	Survey design	Findings suggest that the athlete's mental health is key in dealing with injury and rehabilitation.
7	Tracey J. 2003	The emotional experience of injured athletes	10	Qualitative methods such as in-depth interviews	The study found that cognitive appraisal of injured athletes will determine injury perceptions and rehabilitation.
8	Yang J, Peek-Asa C, Lowe JB, Heiden E, Foster DT. 2010	Patterns of social support	256	Prospective observational study.	Since the social support provided by the coaches are effective in dealing with the injury and rehabilitation outcomes, they must also be equipped with interventions and strategies in dealing with injury and rehabilitation.
9	Judge LW, Bellar D, Blom LC, Lee D, Harris B, Turk M, et al. 2012.	Perception and expectations of Social support	165	Quantitative survey design	Strength conditioning coaches are efficient in dealing with injury and associated psychological responses.

Table continued

10	Yadava V, Awasthi P. 2016	Response to injury, The rehabilitation process, Psychological Readiness			The psychological factors must be dealt with the interventions which aim to ease the rehabilitation process and injury prevention.
11	Scolnik M, Nakamura Y, Howard A, Murnaghan L, Macpherson A. 2018	psychosocial effects of the injury on female	6	FGD & interview methods	Social support influences rehabilitation outcomes and it has a lot to do with gender such as the feminine perspective.
12	Clement D, Arvinen-Barrow M, Fetty T. 2015	psychosocial Responses during the different phases of injury rehabilitation.	8	Qualitative study, (semi-structured interviews)	The integrated the framework helps in understanding the interaction of physical, psycho-social factors of sport-injury and rehabilitation, it also helps in designing the interventions.
13	Bolling C, Delfino Barboza S, van Mechelen W, Pasman HR. 2019.	Perception of sports injury	10	Semi-structured interviews	The coaches and physiotherapist found that performance limitation indicates the sports injury
14	Bejar MP, Fisher LA, Nam BH, Larsen LK, Fynes JM, Zakrajsek RA. 2017	Athletes' experiences of injury and rehabilitation	11	Consensual Qualitative Research (CQR) methodology	<p>coping strategies previously identified in the injury literature as positive self-talk and setting the goal, more unique findings of the social dynamics</p> <p>Interpreting these findings within the context of the biopsychosocial model of sports injury rehabilitation, we would argue that social/contextual factors (namely social network and situational characteristics) can directly impact sports injury rehabilitation.</p>
15	Lentz TA, Zeppieri G, George SZ, Tillman SM, Moser MW, Farmer KW, et al. 2015	Reinjury/Lack of Confidence and Return-to-Sport Status	73	Case-control study; Level of evidence.	Lack of confidence and fear of injury, weakness and decrease in movement are key factors in dealing with return to play stage.
16	Sonesson S, Kvist J, Arden C, Österberg A, Silbernagel KG. 2017	Expectations, motivation, return to play stage.	65	Quantitative, Survey design	Facilitating motivation and higher motivational levels among injured athletes facilitate return to play stage.
17	Müller U, Krüger-Franke M, Schmidt M, Rosemeyer B. 2015	Parameters for return to pre-injury level	40	Quantitative, Survey design	psychological factors such as fear of pain, reinjury and low level of confidence are strong predictor of rehabilitation process
18	Covassin T, Crutcher B, Bleecker A, Heiden EO, Dailey A, Yang J. 2014	Postinjury Anxiety and Social Support	525	Cross-sectional study.	Concussion and injury among athletes produce similar state of psychological implications such as anxiety and turn out for social support in recovery, whereas injured athletes are more satisfied with social support received in recovery and concussed athletes are in dire of social support in return to play stage.

Table continued

19	Yang J, Schaefer JT, Zhang N, Covassin T, Ding K, Heiden E. 2014	Social Support Depression and Anxiety at Return to Play	387	Cohort study	Findings imply that buffering effect of social support from Athletic trainers acts beneficially in physiological and psychological recovery and return to play stage.
20	Groot AL de, Weaver AG, Brown SN, Hall EE. 2018	Social support	31	semi-structured interviews	Providing social support from various sources helps and the provision of social support should be split between the support staff. Creating new pathways such as creating opportunities and talking about the recovery process helps the athlete to recover soon. Strategies such as educating athletes and support staff regarding social support help in dealing with injury and stress which may not interfere with other common activities.
21	Podlog L, Wadey R, Stark A, Lochbaum M, Hannon J, Newton M. 2013	Key attributes of psychological readiness. Factors influencing psychological state.	7	focus group and follow-up & semistructured interviews	Confidence; realistic expectations of one's capabilities, motivation will determine the readiness among injured athletes and Trust in rehabilitation providers, accepting post injury consequences.
22	Maurice S, Kuklick C, Anderson M. 2017	Integrated coaching knowledge & social support during injury rehabilitation		Hypothetical injury scenarios are shared and analyzed	Coaches must also trained to provide social support as part of training and coaching.

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