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Providing social support to injured athletes: Applications of the international sport coaching framework

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Abstract

This manuscript aims to use the International Sport Coaching Framework (ISCF) to highlight how integrated coaching knowledge (i.e., professional, interpersonal, intrapersonal) can be used to offer athletes' social support in the injury rehabilitation process. Existing research suggests that injured athletes may be isolated from their coach and team, which contributes to negative emotions that significantly shape athletes' return to play. Research exploring social support provided by others, excluding coaches, during the rehabilitation process has shown to mediate the effects of injury, yet little research has shown how coaching knowledge is used to provide social support to injured athletes. This manuscript applies integrated coaching knowledge towards providing social support during injury rehabilitation. Hypothetical injury scenarios are shared and analyzed using the ISCF to show how the knowledge can be applied to provide social support. This review suggests coaches can apply and expand their knowledge towards providing social support in the injury rehabilitations process.

Keywords: Recovery, coach-athlete relationships, coach effectiveness, social support

Introduction

The International Council for Coaching Excellence (ICCE) is an organization that has synthesized and critiqued the most up-to-date research on coaching knowledge in order to produce the International Sport Coaching Framework (ISCF). The ISCF outlines the professional, interpersonal, and intrapersonal knowledge that all effective coaches should possess to produce positive athlete outcomes [1]. The effective coaching knowledge (i.e., professional, interpersonal, and intrapersonal knowledge) outlined in the ISCF, are highly-contextualized knowledge foundations that are interdependent of each other, yet dependent upon the coaches' sport, environment, and context in which they engage [2]. Nonetheless, one aspect of coaching that requires effective coaching knowledge, which is frequently overlooked, is in the context of injured athletes [1-3].

Sport science scholars have determined that injured athletes often experience negative psychological implications, such as concerns about losing their position on the roster, feeling depressed, experiencing decrements in self-esteem, and increased anxiety about the rehabilitation process itself [4, 5]. The aforementioned psychological implications have been demonstrated by researchers to negatively influence athletes' recovery rates and/or have even resulted in athletes dropping out of their sport completely [5-10]. However, one important variable that researchers have determined to help significantly overcome the negative psychological implications of injury has been the degree of social support athletes receive during the injury rehabilitation process [11]. But, it has been well documented that, in general, injured athletes are not supported beyond the physical rehabilitation of their injury and often feel abandoned by coaches and teammates [12-14]. Thus, coaches who unintentionally neglect their injured athletes may not possess the knowledge needed to provide the social support necessary to overcome the potential negative psychological implications present in the rehabilitation process. Additionally, in some instances, coaches believe providing social support to injured athletes are not part of their responsibilities and consequently focus on those who can participate [15]. Certainly, the professional, interpersonal, and intrapersonal coaching knowledge outlined by the ISCF and contextualized to how these knowledge areas interact to provide social support to injured athletes would help athletes make progress in their recovery

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and overcome the negative psychological implications [2]. Therefore, with coaches acting as critical point people to overcome the negative implications of sport injury rehabilitation, it is worthwhile to explore further how the knowledge components of the ISCF apply to the context of providing social support to injured athletes.

While a majority of the research examining the knowledge components of the ISCF has focused on professional, interpersonal, and intrapersonal knowledge independent of each other in sport specific contexts [16-18], there is a lack of research that not only conceptualizes how the knowledge components interact with one another but, also how the knowledge areas are applied to the specific context of providing social support to injured athletes (see Figure 1). Therefore, the purpose of this manuscript and proposed model (see Figure 1) is to use the ISCF to conceptualize how professional, interpersonal, and intrapersonal knowledge interacts and is utilized to provide social support to injured athletes. In the following sections, we provide a review of the research that has explored athletes' experiences upon the onset of injury (i.e., initial emotional response, rehabilitation, and return to play) and the implications of social support on the rehabilitation process. We then explain the three knowledge areas of the ISCF and connect how each knowledge area is applied to the context of providing social support to injured athletes. We demonstrate how the three knowledge areas interact and can be applied to context of providing social support to injured athletes by offering hypothetical situations experienced by one of the authors. We conclude this manuscript with strategies for coaches, coach educators, and researchers to draw upon in an attempt to provide suggestions for future research and practical applications.

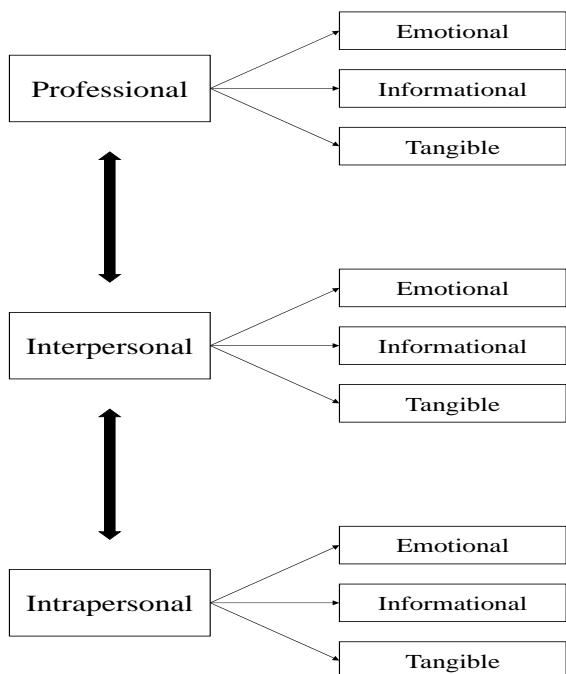


Fig 1: Knowledge Areas of ISCF and Social Support.

Injury Rehabilitation Processes

Athletic injury is an inevitable component of sport participation and when athletes sustain an injury, they will enter into the recovery and rehabilitation process [19]. Although injured athletes may have a recovery experience that looks similar to other injured athletes' experiences (i.e., feeling down, anxiety about rehabilitation), the rehabilitation

and recovery experience itself is unique to each athlete. Yet, in general across sport injuries, researchers have determined that athletes engage key obstacles or events that are typically experienced in three stages of injury rehabilitation. Almost immediately after sustaining an injury, negative psychological states such as anger, frustration, or anxiety are likely to emerge at this initial stage of injury [15, 20, 21]. During this initial stage, a lot of information is still unknown about the status of the athlete moving forward, and thus athletes are dealing with an emotional upheaval prompted by the onset of the injury [4]. As one would expect, there are large amounts of stress experienced by athletes while awaiting a diagnosis to learn more about their status. Bianco (2007) has suggested however, that those involved in the rehabilitation process at this initial can mitigate the psychological implications by helping athletes understand what the injury is and means within their sport and team (i.e., roster position) and what they may experience in the path ahead.

After receiving a diagnosis, athletes will begin to work on rehabilitating the injury and move into a second stage of the recovery process [4]. As injured athletes work to rehabilitate the injury, research has demonstrated that they experience feelings resembling grief as a result of feeling alienated from coaches and teammates [5, 22]. Additionally, because at this point athletes have been diagnosed with the severity of their injury, scholars have pinned more severe injuries and longer rehabilitation processes to having a greater negative influence on athletes' self-esteem and physical competency when compared to less severe and shorter rehabilitation time frames [5, 23]. Despite the negative implications of injury within this stage, treatment teams that provide social support and help athletes to stay motivated has been demonstrated to relieve the negative psychological implications as athletes work through their rehabilitation plan back to competition [4].

When athletes initially return to competition, their confidence and perceived competence in their ability is quite lower than their pre-injury state, which in turn causes frustration [5, 24]. In the return to play stage, naturally, athletes have been removed from the competitive environment and may not have been training with the team, which may lead them to doubt their skill level or competencies upon the return to competition [5]. Thus, the take home message here is that while injured athletes may be cleared physically to return to competition, they may not be psychologically ready [4, 25]. In this case, when athletes return to play without being psychologically ready, research has demonstrated that additional stressors, such as re-injury anxiety manifests [25, 26]. Interestingly, however, when athletes have a sense of control over the rate of their return to competition, it seems to afford them opportunity to gain more confidence, reduce their re-injury anxiety, and improve their perceived competence in performing skills [5, 27]. Similarly, and also worth noting, is that goal setting and other interventions that specifically focus athletes' attention on taking the necessary steps to feel ready both mentally and physically have shown to overcome the barriers to returning to play from injury [4]. In this way, these types of activities act as social support, which we turn to next.

Social Support

In the previous section, we have very briefly alluded to the research that has determined that increasing injury competence, motivation, and providing goal setting interventions are forms of social support that can potentially overcome the negative implications of injury experienced by athletes in the rehabilitation process. Social support has been

defined as “an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient” [28, 13]. Social support has been widely studied in the context of injury as a means to mediate and facilitate the rehabilitation experience [4, 20, 29]. Hardy and Crace (1993) suggested that social support should be an important concern for those who work directly with injured athletes, such as coaches [30, 31]. Coaches’ ability to understand what social support can look like and how to provide it is a critical factor when providing the appropriate type of social support [31]. Existing literature has concluded that emotional, informational, and tangible types of social support, act as mediators for coping with injury by reducing its negative implications [4, 20, 29, 32]. When athletes receive a type of social support that is specific to their needs, they can develop more adaptive responses to injury stressors, more competence in respect to their injury, and greater confidence [11]. More specifically to the anxiety implications on athletes as they progress through the rehabilitation process, Covassin *et al.* (2014) has provided evidence that when the three types of social support are provided, injured athletes experience lower levels of state anxiety as a result [33]. Furthermore, research has demonstrated that athletes with greater satisfaction for the amount of social support available to them enhances their motivation and ability to handle distress during rehabilitation [33]. Due to the importance of the three main types of social support, we now turn to explore them more deeply [30].

Emotional support is one type of social support that shows injured athletes that others are empathetic to what they are experiencing. Emotional support has been shown to be something as simple as social support providers comforting athletes and/or letting injured athletes express concerns about their injury [30, 34]. In this way, listening support, which is a type of emotional support, occurs by engaging in conversations without trying to offer solutions to a problem or making any judgments about what the athlete is experiencing [35]. Ford *et al.* (1993) suggested several additional methods for engaging in emotional support, such as keeping open lines of communication, providing reassurance, and helping the athlete set realistic goals for rehabilitation [35].

Informational support is another type of social support that has been categorized through research as the education injured athletes receive regarding their injury and the rehabilitation process, which in many cases comes in the form of feedback athletes receive on their rehabilitation efforts [4]. Similarly, another way of providing informational support is through the communication with other athletes who have since recovered from a similar injury. This approach to informational support has been shown through research to provide more information to athletes about the rehabilitation experience, while engaging them in the opportunity to expand their support network [35]. Another form of informational support that has been determined by researchers to overcome the negative psychological implications during injury rehabilitation are what has been referred to as task challenges. Task challenges engage injured athletes with challenges through goal setting during recovery while providing encouragement as athletes engage setbacks and obstacles [15, 35]. For example, this could be where the informational support provider devises strategies that encourage their injured athletes to continue engaging in physical training in regards to their rehabilitation program to the injured area and also in un-injured areas to the best of their ability [35]. Additional activities which classify as informational support

include designing training programs that challenge injured athletes to improve physically, while the informational support provider continually acknowledges and reinforces athletes’ achievements [35].

Other research has determined that tangible support as another type of social support that can facilitate overcoming the negative psychological implications of athletes’ rehabilitation process by providing both personal and material assistance [34]. This form of support could include acts of service that may provide assistance to athletes as they work through injury rehabilitation. Providers of tangible support may arrange rides for injured athletes, assist with errands or daily chores, and help athletes manage the financial aspects of injury [34]. In this way, tangible support may be difficult for any one tangible support provider to accomplish. Rather, research has determined that tangible support providers orchestrate the organization of many resources and individuals to help engage tangible support. Further, tangible support providers facilitate a network of referral resources external to their organization or team, which engages athletes with the necessary resources to receive tangible support [4, 34].

In summary, up to this point, we have addressed what injured athletes experience as they engage the rehabilitation processes. Subsequently, we have explored the research on social support and how the different social support types (i.e., emotional, informational, tangible) can act as a vehicle to overcome the negative implications of injury that athletes experience. However, despite these positive influences that engaging social support in the rehabilitation process can provide to athletes, research has determined that coaches often do not engage social support [12, 13, 14]. Here, we now turn to the coaching knowledge outlined in the ISCF framework in order to connect how coaching knowledge can be applied to providing social support to athletes during the rehabilitation process.

International Sport Coaching Framework

Coaching effectiveness has been defined in the ISCF as the application and integration of professional, interpersonal, and intrapersonal knowledge in an effort to expand athletes’ competence, confidence, connection, and character [2]. The foundation of the coach effectiveness (i.e., ISCF) framework is derived from research conducted on the knowledge possessed by expert teachers [36-39], and further supported by coaching researchers across a multitude of sport contexts and coaches [40-42]. However, one drawback is that the latter research has explored the professional, interpersonal, and intrapersonal knowledge as individual constructs in sport specific contexts rather than examining the ISCF as a complete integrated framework [16-18, 43-45]. Thus, the understanding of these knowledge types as independent constructs is important, but their integration is a necessary step in using the ISCF to address how coaches can effectively work with injured athletes.

Professional knowledge

Professional knowledge contains a highly-contextualized body of knowledge that goes well beyond information pertaining to the technical and tactical aspects of sports skills in coaches’ area of interest [46]. Instead, professional knowledge is a highly-integrated knowledge construction which spans the sport and exercise sciences, sport pedagogy, sport psychology, motor learning, administration, and leadership [40, 45]. Drawing upon the aforementioned knowledge foundations, coaches determine the content

needed to be taught to their athletes and the pedagogical strategy to teach it [46]. In the context of injured athletes, components of professional knowledge which need to be utilized would include: sport specific related injuries (i.e., baseball; Tommy John), anatomy and physiology of the injury, psychological implications of the injury, nutritional aspects, and stages of injury rehabilitation. In addition, knowledge about pedagogical strategies specific to facilitating the stages of injury rehabilitation and motor learning as it relates to re-engaging the learning process during injury and the return from injury could be implemented. Coaches may develop instructional and pedagogical strategies which develop athletes in areas where they can improve, but at the same time, perform those activities which do not cause undue stress to the injured area while planning for their return.

Interpersonal knowledge

Interpersonal knowledge is the knowledge used to exhibit skills for interacting with others [47]. Essentially, interpersonal knowledge is coaches' people skills as they interact with athletes, administrators, other coaches, assistant coaches, parents, officials, community members and stakeholders. At the critical foundation of this knowledge type is coaches' ability to comprehend and interpret varying personalities, qualities, and characteristics of people in individual or group situations and to communicate with them efficiently [48, 49]. Essentially, effective coaches utilizing interpersonal knowledge develop powerful and meaningful relationships amongst individuals within a complex social environment [47, 49]. With this knowledge, coaches develop connections and a sense of their closeness with others by adhering to others' inherent needs [50]. In the context of injured athletes, interpersonal knowledge that would need to be engaged would include: detecting and interpreting behaviors of those athletes who may lack confidence, feel abandoned, feel resentment of others during injury, communicate with athletic trainers and injured athletes simultaneously, involving athletes in team dependent tasks, communication with the teammates of injured athletes to enhance psychological well-being, providing resources, and establishing social support systems for injured athletes.

Intrapersonal knowledge

Intrapersonal knowledge is used by coaches as a cycle of reflection in which they evaluate and critique both themselves and their athletes [3, 51, 52]. This type of knowledge involves coaches detecting problems during coaching experiences, generating strategies to potentially overcome these problems, and then actively experimenting with those strategies [51]. In general, coaches possess intrapersonal knowledge which allows them to reflect on creating a positive and safe learning environment, if their pedagogies are influential, how they are respected as a coach, and their athletes' underperformance [3, 17]. Although coaches possess intrapersonal knowledge in these general areas, the actual use of intrapersonal knowledge is dependent upon the situation and environment [51]. The coach's use of reflection aids in the continuous development of new ways of coaching [16, 51]. In the context of injured athletes, intrapersonal knowledge used by coaches would include reflective practice on the coach's belief system as it relates to injury and their personal athletic experiences with injury as a participant. Coaches could also reflect on their athletes' responses to the negative implications of injury to move towards developing specific strategies for working with injured athletes. Furthermore, intrapersonal knowledge can be

applied to injured athletes by reflecting on building or maintaining relationships with athletes during the injury processes and the subtle differences between individual athletes when developing or maintaining those relationships.

Connecting Coaching Knowledge to Social Support

Similar to the three knowledge areas of the ISCF, the three major categories of social support are often carried out interdependently [53]. Injured athletes may be receiving various amounts and types of support at any given time from a myriad of individuals [31, 54], which may be perceived by injured athletes as beneficial even if they are not experiencing stress associated with their injury [11]. Perhaps the most influential individual with the capacity to provide the three types of social support are athletes' coaches [15, 31, 55]. However, in many cases, researchers have demonstrated that athletes do not perceive or receive social support from coaches [12-14, 53-56]. More specifically, Abgarov *et al.* (2012) found that in some cases, coaches do not acknowledge the severity of their athletes' injuries and at times push athletes to continue competing while injured rather than provide social support. When athletes continue to participate in environments where their injuries are taken trivially, a breakdown in relationships with teammates and coaches has shown to be a result [56]. In other situations when coaches are engaging injured athletes during the return to competition stage of injury, coaches may avoid injured athletes completely because they do not want to appear to be demonstrating favoritism towards injured athletes or perhaps believe the athletes need to resolve their difficulties without their assistance [31, 55]. Conversely, Abgarov *et al.* (2012) found that coaches who applied knowledge through the acts of listening, understanding, encouragement, and appreciation towards injured athletes produced beneficial effects on athletes' ability to overcome the negative psychological implications of injury. In many ways, the coaching knowledge applied to the injured athlete in the aforementioned research demonstrates that when coaching knowledge is used to provide social support it can produce beneficial outcomes. Here, the provision of social support requires knowledge and certainly the types of knowledge demonstrated in the ISCF (see Figure 1), which we look to conceptualize more specifically next.

When drawing upon professional knowledge, coaches are relying on knowledge about the athletes' injury specifically and engages foundational communication skills to provide emotional support. Further drawing upon professional knowledge, coaches could refer athletes to athletic trainers or other medical professionals as a way to provide informational support, while developing a protocol for how to use a network of resources would be a way to provide tangible support that best helps injured athletes. Interpersonal knowledge reflects coaches' people skills and ability to interpret what injured athletes' needs may be at any given time and how to provide the appropriate type of social support. By understanding injured athletes and their role on the team, coaches are using interpersonal knowledge to identify what and when athletes may need informational support. Coaches drawing upon interpersonal knowledge in the context of the injury rehabilitation process would know when to provide informational support to help athletes as they engage obstacles in their rehabilitation and when athletes need the emotional support of someone to just be present with them. The needs of injured athletes can be assessed through the use of coaches' interpersonal knowledge and may extend to the types of physical or material assistance that may be needed as

tangible support, such as managing medical expenses or grocery shopping. When coaches are drawing upon interpersonal knowledge they are reading and interpreting what their athletes' injury experiences are and how to improve these experiences, which would help coaches improve their capacity for providing informational, emotional, and tangible support towards other injured athletes that occur within their team in the future. Coaches can draw upon intrapersonal knowledge to reflect on their own injury experiences that they might have experienced as an athlete. In this way, the understanding of what their injured athletes could be potentially be experiencing as they recover from their injury would provide a means for engaging emotional support to the injured athletes. Coaches may also use their intrapersonal knowledge to reflect on ways to improve injured athletes' day to day activities in the form of tangible support by facilitating the arrangement of transportation to doctor's appointments and/or ensuring that they are not becoming socially isolated. To further bring light to the complex integration of the ISCF knowledge components towards providing social support we provide hypothetical scenarios based on one of the author's experiences.

Hypothetical Scenario 1: The injured college freshman

During the first week of practice, Sarah, a freshman field hockey player, suffers an anterior cruciate ligament (ACL) injury which requires surgical reconstruction. She was a highly-touted recruit and was expected to see a significant amount of playing time in her rookie season. She lives out of state and does not know anyone on campus other than her teammates, with whom she is still forming relationships. She will be going home to have her surgery and will return to campus at the start of school in two weeks.

Analysis

While ACL injuries may be common, the injury recovery process is unique to each athlete. The ability to engage this athlete is difficult, as coaches and teammates have not had the opportunity to build any rapport with this student-athlete and may find it difficult to utilize their interpersonal knowledge. Given that the coach has no previous experience with this athlete's response to injury, it is imperative for the coach to be more vigilant of the athlete's response to the injury and prepare for the negative implications that will likely follow. The coach can achieve this through the coach's use of intrapersonal knowledge via constant reflection on his or her interactions with the athlete as well as communicating any changes in the athlete's behavior with the rest of the support team. It is critical for coaches to demonstrate interpersonal and professional knowledge by establishing open communication between themselves and their athletes throughout the recovery process and return to sport participation.

In addition to the stresses of her injury, Sarah has moved away from her primary support network and is beginning college, which is a major life stressor. Sarah may be negatively affected by the lack of a developed social support network within her team. If group does not engage the athlete, the chances of her returning to the field hockey team decrease, as well as the possibility of her not returning to school. It may take more effort to keep this athlete engaged, especially in the first few weeks of her recovery. Keeping Sarah engaged can be achieved by using both emotional and informational support to reassure her that she can overcome this injury and return to play. Coaches can utilize

intrapersonal knowledge to reflect on their experiences with other athletes who have had the same injury when working with Sarah. Providing Sarah with the social support of others who have been in a similar situation provides her with informational support by helping her learn how to cope with her injury and emotional support by having someone to talk to about her concerns during the recovery process. See Figure 2 for a visual representation of how this coach's social support integrates with coaching knowledge.

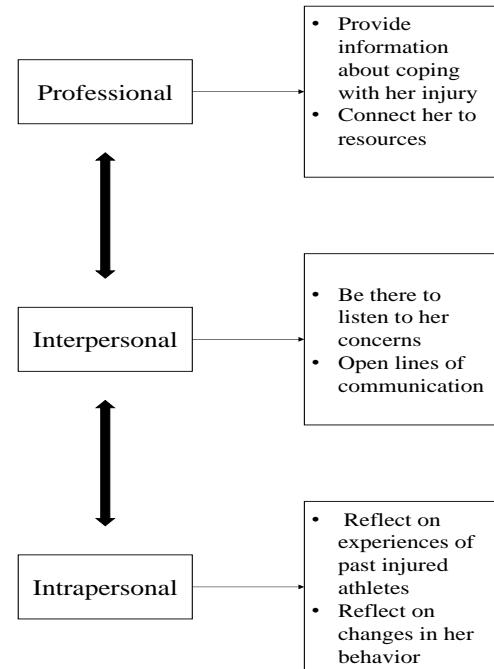


Fig 2: ISCF components applied to social support.

Hypothetical Scenario 2: The injured high school senior football player.

Juan, a running back on the football team, is having a stellar senior season and is being recruited by several Division II programs. During practice, Juan unknowingly sustains a concussion and begins to struggle to remember the offense and is frequently dropping the ball. His coaches continue to push him, but his performance is noticeably worsening. He is becoming withdrawn from his coaches and teammates and is beginning to struggle in the classroom.

Analysis

Juan's coach could address this injury by letting him know that the priority in this situation is for him to get better. By connecting Juan to the people who are going to help him get better, the coach is utilizing professional knowledge to demonstrate informational and tangible social support for Juan. Coaches typically have an idea of the type of work ethic their athletes have when utilizing their interpersonal knowledge and can share they understand the setbacks which come with an injury as a way to offer emotional support. As Juan's coach, some steps to take to help Juan through his recovery might include goal setting, involving him in practice in a non-contact role so that he can still feel connected to the team and contribute in another capacity, or even assigning a teammate to assist Juan in staying involved with members of the team off the field (Robbins & Rosenfeld, 2001).

Hypothetical Scenario 3: The injured youth soccer player.

Mary is a 10-year-old soccer player who has a hard collision with a defender and is slow to get up. As the coaches are

tending to her on the field, the parents are telling her she is not hurt, she needs to be tougher, and to get up and keep playing. She insists she is alright and stays in the game, although she is visibly limping. She is slide tackled and is laying on the ground crying and the athletic trainer hired for the event comes out to render aid to the athlete. The athletic trainer and coach talk with the athlete and she tells them she does not want to finish the game because she is in pain. She is also afraid her parents will yell at her because she gave up and cannot finish the game. The coach and athletic trainer both agree the athlete will not return to play. The coach quickly diffuses the situation by discussing the plan of action with the athlete's parents.

Analysis

Youth sports have the potential for injury situations to become volatile, where over-involved parents may have an influence over volunteer coaches and at times parents can lose sight of the importance of an athlete's health compared to the importance of winning at all costs. The coach has utilized interpersonal knowledge to understand not only the athlete but also the nuances of this family, allowing the coach to use this information to assist in the discussions regarding the athlete's status and use professional knowledge to develop a plan for the athlete to return to play. The coach can also provide emotional support by reassuring the parents that the athlete is genuinely hurt and utilize information support to explain that continuing to play can potentially increase the severity of the injury. The loss of this player represents several implications for the coach that will require the use of both professional and interpersonal knowledge: forcing a need to rearrange the line-up, providing instruction to the players affected by the change, reassuring the team they are still capable of meeting the new demands of their positions, and dealing with the parents and problems this change may create. However, the coach's use of interpersonal knowledge to understand the family and the personality and stressors the athlete is exposed to allow for this scenario to be dealt with effectively, and ultimately utilize professional knowledge to protect the health and emotional well-being of the injured player.

Discussion

Each of the above scenarios highlighted different responses to injury that were by no means all encompassing. However, the common factor present throughout any injury rehabilitation experience is the provision of social support from coaches. As established in the review of the literature and the scenarios, we have demonstrated the knowledge needed to address the implications associated with the stages of injury rehabilitation. Some of the implications of injury may include stressors that are physical, performance related, physiological, psychological (i.e., anxiety, confidence), and social. Therefore, in the following discussion we provide strategies that draw upon the integration of professional, interpersonal, and intrapersonal knowledge used to provide three types of social support with the intent to improve the injury rehabilitation experience for injured athletes. The following strategies, from which we draw upon literature from other fields of study, provide implications for future research, approaches to be taught in coach education, and practical tools for coaches.

Coaches can acquire and expand upon their professional knowledge in relation to injury through science-based journals, the internet, books, sport psychology consultants, and other coaches [57]. Other sources for gaining a better

understanding of the nature and cause of the injury would be consultations with experts, such as athletic trainers [31]. Here, we should note, the interaction between how coaches gain professional knowledge by engaging interpersonal knowledge through collaborations with others. Specific strategies for coaches facilitating consultations with athletic trainers would be to hold scheduled, weekly meetings where athletes, coaches, athletic trainers, and even parents are present in an attempt to gain professional knowledge and monitor the recovery process of injured athletes [58, 59]. By engaging these individuals, this not only keeps the support network involved, but also helps the network gain an understanding of the physical, physiological, and psychological nature of athletes' injuries. Coach and athlete debriefs, where the coaches and athletes modify physical plans and establish critical goals, can further enhance emotional closeness between them and decrease the likelihood of athlete abandonment. Additionally, Rees, Mitchell, Evans, and Hardy (2010) recommend coaches to implement an open-door policy to encourage communication with athletes [11]. To be the most effective, the open-door policy should be established by coaches prior to any athletes becoming injured which will aid in injured athletes' perceptions of available social support from the coach. Future research needs to examine how pre-injury strategies, such as open door policies, and pre-existing relationships with athletes before injury occurs influence how athletes are provided social support by their coaches. Additionally, future research could explore how coaches' professional knowledge relative to the different types of social support is developed through interpersonal collaborations with others.

Beyond the interpersonal knowledge used and developed by the coach as they gain a better understanding for the injury experiences of their athletes, it is also important for coaches to engage in reflections about their interactions with their athletes. In this regard, coaches can reflect on previous behaviors by video recording their coaching behaviors or recording interactions with athletes with respect to how they engage in social support. Coaches can then highlight areas to improve their engagement with injured athletes to facilitate the recovery process. In this way, and using Schön's theory of reflective practice (1983, 1987), coaches would attend to injured athletes in the process of identifying dilemmas, strategizing ways to overcome the problem and then experimenting with those strategies as they directly relate to the injured athlete [60, 61]. Despite the rationalization that video recording coaching behaviors in respect to injured athletes may not be feasible for all coaches due to cost and time restraints, technologies such as a smart phone used to record short video clips daily or weekly of coaching behaviors may help overcome the barriers. Nonetheless, the reflective process involves the intrapersonal knowledge component when coaches engage in dialogue with athletic trainers to gain multiple perspectives in identifying problems, which would allow coaches to recognize opportunities to improve social support (e.g., checking in with athletes after a training session). Future research could explore the effect of reflective practice interventions specifically integrated to develop coaches' intrapersonal knowledge in the context of injured athletes on their ability to provide social support.

Both professional and interpersonal knowledge will come into play again when developing ways for the athletes' teammates to engage in the social support system, which would also help with athletes' motivation during rehabilitation [31]. In this way, coaches could create tasks or an environment where injured

athletes' teammates engage with them in meaningful ways. One such way to keep injured athletes involved with the team and thus providing both emotional and informational support would be to assign them peer coaching tasks. The purpose of a peer coaching approach is twofold, in that injured athletes could be used as peer coaches for a healthy teammate and conversely, the healthy teammates can be involved in providing social support to facilitate injured athletes' recovery. Secondly, peer coaching approaches that integrate positive feedback, check for emotional well-being, offer questions, analyze technical skill performance, or engage motivation can act as ways to provide emotional, informational, and tangible support [31]. By using the peer coaching approach, coaches draw upon their professional and interpersonal knowledge by engaging the knowledge necessary to implement a pedagogical strategy to engage injured athletes with their teammates (i.e., building social support network) and understand what tasks are appropriate not only for injured athletes but also their teammates (i.e., knowing physical limitations, providing challenges). In contrast, however, research has shown that being around teammates during practice or training can be a negative emotional experience for athletes if they are physically unable to participate [5]. These findings support the importance for coaches to effectively utilize their interpersonal knowledge when asking injured athletes to attend practice and demonstrate an understanding and emotional support if the athlete finds it too difficult [56]. Nonetheless, future research needs to explore how coaches draw upon interpersonal knowledge to provide appropriate and effective social support both within and outside the competitive environment.

Drawing upon the motor learning literature, which would fall under coaches' professional knowledge, can provide additional ways for coaches to engage social support [62]. For one, coaches using professional knowledge in respect to motor learning can provide feedback through several different methods to offer informational support. Feedback refers to information an individual receives pertaining to making corrections in a motor skill, which acts as a way to provide informational support [63, 64]. For example, acknowledging the difficulty of the tasks being completed by the injured athletes and offering encouragement or advice on how to engage continued improvements would be considered feedback [35]. Providing feedback to injured athletes demonstrates both the professional and interpersonal knowledge components and is a useful strategy in facilitating the performance of sport specific tasks. It can be used by coaches, medical staff, and even the athlete's teammates. More frequent feedback encourages passive, rather than active, participation and can reduce the athlete's ability to perform those skills and may lead athletes to perceive the feedback as nonsupport rather than as informational support. Thus, the amount of feedback could be reduced as rehabilitation progresses and coaches can use intrapersonal knowledge to engage in reflective practices, as mentioned previously, to make these decisions. Feedback deliveries can be done by using an intermittent schedule, a faded schedule, setting up boundaries, or allowing the performer to have some control and decision-making over when and what type of assistance is provided during skill practice [64]. The amount, frequency, and quality of feedback used as informational support requires coaches' use of interpersonal knowledge to individualize the feedback to each athletes' needs and is based on the stage of recovery, the skill performed, and the individual athletes. The feedback provided could also incorporate elements of emotional support so the

injured athletes may perceive they have the necessary emotional resources to cope with the recovery process. Although the aforementioned strategic uses of coaching knowledge related to how feedback would provide social support to injured athletes have been theorized to provide positive influences on social support, further empirical evidence is warranted.

Another suggestion to help provide social support to injured athletes by using professional knowledge would be to utilize modeling of sport specific movements or a series of movements during the rehabilitation stage of recovery. Modeling in this context would refer to injured athletes replicating the movements and actions of peers or coaches, which will require coaches to draw upon both professional and interpersonal knowledge to select appropriate movements and peers who can assist [65]. These demonstrations are powerful sources of informational and tangible support given prior to skill performance that provide athletes with the general movement pattern and the goal of the movement. Additionally, athletes can communicate information about the way sub-movements (e.g., rotating their hips, shifting their weight) are coordinated and related to one another that are otherwise difficult to put into words in a more direct instructional approach. The use of modeling will allow for injured athletes to be motivated by their peers and coaches through both emotional and informational support as well as maintain positive relationships with team members and be an active participant in their return to competition. Future research would need to explore how coaches' professional, interpersonal, and intrapersonal knowledge pertaining to modeling for injured athletes interact to produce influential social support outcomes.

In lieu of many strategies highlighted in this manuscript that demonstrate how professional, interpersonal, and intrapersonal coaching knowledge can be drawn upon to provide social support to injured athletes, we recognize that some of these strategies may not be applicable for all coaches based on their specific training needs and the needs of their athletes. Coaches have demanding positions which require them to fulfill multiple roles that may sometimes interfere with their ability to put full attention into the rehabilitation activities of their injured athletes. If coaches feel they cannot fully attend to the social support needs of their injured athletes, it may be in the best interest for both coaches and athletes to refer athletes to an external individual or agency as a way to provide social support. Coaches may find referral sources available through their athletic department, rehabilitation centers, team physicians, athletic trainers, counseling centers, and sport psychology consultants in the community. These referral sources can provide each type of social support the athlete needs and in a variety of settings and formats. Future research would need to explore how coaches' provision of social support through offering referral resources influence athletes' rehabilitation processes in either positive or negative ways.

Conclusion

With injury being a facet of sport which will seemingly never cease to exist, it is important for coaches to understand how to apply their knowledge to the specific context of injured athletes. The ISCF highlights three areas of knowledge (i.e., professional, interpersonal, and intrapersonal) that coaches need to be able to demonstrate to be seen as effective coaches. As seen in Figure 1, the types of knowledge highlighted in the ISCF that coaches possess connect with the three major types

of social support. These connections were reinforced throughout the hypothetical scenarios and analyses, explicitly pointing out where coaches' specific knowledge types will be required to address the types of social support that should be provided in that situation to facilitate athlete recovery.

In conclusion, if coaches are to be seen as effective in the context of injured athletes, knowledge in all areas of the ISCF should be applied. Future research should examine the integration of the ISCF knowledge types in the context of injured athletes using complexity theory rather than reductionist theoretical approaches, to provide a deeper understanding for the interactive role these knowledge types play in providing social support [47]. The integration of ISCF as a framework to provide social support in the context of injured athletes also provides additional content and knowledge for coach educators to facilitate coaches' application of the highly-contextualized knowledge foundations into practice. Coaches will continue to deal with athletic injury as long as they are engaged in the profession and should be given the opportunity to learn how to best provide social support to their injured athletes and effectively utilize the ISCF knowledge components to improve athlete outcomes [2].

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