



PSYCHOLOGICAL ASPECTS OF SPORTS INJURIES

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Abstract

Negative competitive and financial effects of injuries in sports, especially in elite sports, pose an exceptional problem for the injured athlete himself, his team, and often also for the wider social community. Recovery from injury proceeds through three phases: the post-injury phase, the rehabilitation phase, and the return-to-sport phase. In all these phases, negative psychological effects of injury are present in the cognitive, emotional, and psychosocial spheres. The type and intensity of these effects, as well as the way the injured athlete responds, largely depend on the severity of the injury, situational factors, the recovery phase, and its duration. Therefore, it is necessary to select the appropriate model and determine an individual recovery strategy for each traumatized athlete. The athlete's mental state and negative response to proposed measures and psychological rehabilitation regime have a direct impact on the physical recovery process itself. From this, it can be concluded that the integration of a sports psychologist and psychotherapist into professional teams (coaches, traumatologists, psychiatrists, and physiotherapists) and athlete recovery programs is a key factor in overcoming injuries physically and psychologically and in a successful return to sport in its full scope.

Key words: *Sports injuries, mental state, psychological rehabilitation, return to sports.*

Intraduction

Significant characteristics of modern sport, which impose the imperative of achieving peak performance, are the large number of athletes and the high frequency of sporting events and intensive training. This requires numerous sacrifices from athletes and the investment of maximum physical effort, which often exceeds the limits of their physical capabilities and frequently leads to injuries. Sports injuries are not exclusive to professional athletes. Highlighting the harmfulness of a sedentary lifestyle and promoting regular physical activity to ensure a healthy lifestyle [1] has led to mass recreational sports participation, which is also accompanied by frequent sports injuries. Sports injuries are one of the biggest problems most athletes face during their

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careers [2]. At the individual level, in addition to the presence of physical pain and the temporary functional deficit of the injured segment, it is almost inevitable that the injured athlete's mental status will be impaired [3, 4, 5]. Absence from competition, and especially the cessation of sports activity for an athlete, most often means a loss of identity and self-esteem. In interpersonal relationships, sports injuries can disrupt the injured athlete's relationships with teammates, coaches, and family members [6, 7, 8]. Although a large number of definitions of sports injuries are found in the literature, there is still no universally accepted one [2]. In their definition, [9] highlight the following as the most frequent and important descriptors: reduced activity level, duration of time missed from competition and training, and the need for medical assistance. The main goal of the injured athlete and their professional and medical team is to return to sport with physical abilities at the pre-injury level [10]. However, numerous studies show that a significant number of athletes, although they regain full function of the injured segment and achieve the clinical and physical performance necessary to return to sport, never manage to achieve that return [11, 12]. The main interpretation of such results is that in a successful return to sport, besides physical factors, other factors also play a role, primarily psychological ones [13]. For many years, the professional community was only interested in the physical and/or physiological aspects of sports injuries, while the psychological aspects were neglected [14]. The first studies on the link between sports injuries and psychological factors date back to 1965 [15]. Since then, researchers have been trying to better identify the mental aspects of the recovery process and their interaction with the physical and physiological aspects of sports injuries, as only by combining all these elements can the most effective recovery of the injured athlete and their return to sport be achieved [16, 17]. Throughout the entire recovery period, injured athletes face various psychosocial challenges, exhibiting reactions in the cognitive, emotional, and psychosocial domains [18, 19]. Sports coaches need to familiarize themselves with the characteristics of psychosocial factors and reactions at different stages of an athlete's recovery so that they can successfully address these challenges at any given moment and ensure the athlete's successful recovery and return to sport [6, 20].

Aim of the study

During their return to sport, injured athletes are exposed to numerous psychosocial problems in addition to physical and physiological challenges. The theme of numerous works in the field of sports traumatology and sports psychology is precisely the various aspects of sports injury. The aim of our work is to collect and systematize scientific knowledge about the characteristics of athletes' psychosocial responses in the cognitive, emotional, and psychosocial spheres during their recovery from injury, through a literature review using the databases: Google Scholar, PubMed, ResearchGate, and MDPI. It is also necessary to assess the frequency and success of the psychosocial interventions applied to injured athletes. The analysis of the collected data should point to some of the most significant guidelines for the effective psychological treatment of the injured athlete and a quick and successful return to sport.



Rehabilitation phases

Based on the integrated model of injured athlete rehabilitation by Clement et al. and Kamphoff et al., a phased approach was proposed that integrates the physical and psychosocial components of the recovery period, with the following phases: reaction to injury, reaction to rehabilitation, and return to sport [19, 20].

Post-injury phase

Immediately after sustaining an injury in the psychological sphere, negative cognitive appraisals dominate the athlete. The way an injury is perceived, or the degree of negativity, is influenced by personal factors: the type and severity of the injury, individual differences [gender, age, personality, etc.], and situational factors: the type and level of sport, the influence of teammates, coaches, agents, and family, etc. [6]. Negative thoughts condition the development of negative emotions such as shock, distress, anxiety, anger, sadness, depression, and disbelief [21, 22, 23]. Among athletes who view sport as part of their identity, the present feeling of confusion, helplessness, and frustration can undermine that identity and negatively impact the athlete's future career [24, 25]. The most common behavioral response of athletes to all these events is seeking social support from significant others [7, 8]. According to Yang et al. in 2010, at this stage of recovery, athletes significantly more often sought social support from their medical and sports team than from family members [26]. Precisely for these reasons, it is vital that the coach and everyone else involved in the recovery process thoroughly inform the injured athlete about the type and severity of the injury, the rehabilitation plan, and the exact recovery time [27, 28]. An unclear diagnosis and prognosis of the injury and/or insufficient support from the medical and sports team can have significant negative psychological consequences for the athlete, which in extreme situations can lead to risky behaviors and dropping out of sport [4, 29]. On the other hand, a large number of athletes exhibit positive psychological reactions in terms of encouragement and belief in successful recovery after diagnosis [28].

Rehabilitation phase

The majority of injured athletes become much calmer after entering the rehabilitation phase due to an awareness of the possibilities for exercise and regaining a certain degree of independence [29, 30]. However, certain limitations during this phase in terms of pain during exercise, the use of uninspiring training, and the absence of positive progress in results can lead to negative emotional reactions in the athlete [32]. The most common result of this is frustration and a decline in motivation for further exercise [33]. Leddy et al., as well as Udry, pointed out that these fluctuations in athletes' psychological reactions are precisely the most consistent phenomenon during the rehabilitation phase [34, 35]. Independent training without contact with teammates, coaches, and audience creates a sense of isolation, uselessness, and worthlessness in athletes, which deepens the loss of identity in an injured athlete [21,



36]. Even in this phase of recovery, the most common behavioral response from athletes is seeking social support, with the focus shifting from the previous phase to assistant coaches, with whom they are in direct contact, and family members.

Return to sport phase

As in the previous two phases of psychological recovery after injury, psychosocial responses of the injured athlete are present in the return-to-sport phase (cognitive appraisals and emotional and behavioral responses). In the realm of cognition, both positive and negative thoughts are present in athletes [19]. Positive cognitive appraisals by athletes develop positive emotional reactions in terms of optimism and excitement about returning to competition, which also leads to a faster return to sport [13]. Negative thoughts lead to nervousness, anxiety, confusion, anger, and fear of being hurt again [33, 37, 38]. A direct result of these negative emotions, especially the fear of re-injury, is behavioral responses in the form of hesitation and restraint when definitively returning to competition, not giving maximum effort during play, and being cautious and avoiding situations that could lead to re-injury [10, 28]. The return-to-sport phase concludes with determining the moment when an athlete, after an injury, can return to sport. This is one of the most complex decisions in sports medicine [39]. In order to make the correct decision, in addition to tests and procedures for assessing the athlete's physical fitness for return to sport, it is also necessary to assess the parameters of the athlete's mental status, as athletes who are considered physically fit are often not psychologically ready to return to sport [40]. Unfortunately, while exact tests and measurements are used to assess an athlete's physical ability [41], no such tests exist to check psychological readiness, which primarily relies on the athlete's self-assessment [38]. Therefore, any assessment of an injured athlete's psychological readiness to return to sport must be based on individual results [14]. The most significant psychological parameters examined in this process are: the intensity of fear of re-injury, the level of self-confidence, and motivation [11, 40]. The intensity of the fear of re-injury is undoubtedly the most significant psychological factor determining the timing of return to sport, as well as the athlete's future career after injury [28, 42]. Self-confidence actually represents the athlete's self-awareness, or their belief in their ability to achieve the competitive level they had before the injury, as well as to achieve the results they had planned at that time [11, 40]. Motivation, both intrinsic and extrinsic, is a psychological factor present throughout the injured athlete's entire recovery period. In the return-to-sport phase, a high level of intrinsic motivation serves as an excellent indicator that athletes are ready to return to sport [43].

Psychological intercentions

Sports injuries, in addition to severe consequences for athletes' physical health, often have deep negative effects on their mental health, which has led to the intensive development and application of psychological interventions during the injured athlete's recovery process [6, 44]. This integrative approach to treatment yields



positive results and accelerates both the physical and psychological recovery of the athlete [16, 45]. Besides the importance of psychological interventions for injured athletes returning to sport, they are extremely important in cases of injuries leading to permanent disability and the inability to continue participating in sports [46]. The most commonly used psychological interventions are: goal setting, social support, visualization and relaxation, and positive self-talk [47, 48, 49]. Which of these the injured athlete and their coach will choose depends on numerous factors related to the type of injury and the athlete themselves, but it is certain that the best results are achieved by combining several psychological techniques.

Positive thinking and goal setting

The primary goal of applying positive thinking in the rehabilitation and return-to-sport phase is to model the injured athlete's way of thinking. In doing so, they should only think about the elements of recovery and future training and competitions that they can control and change to achieve better results. The focus of positive thinking should not be on the results achieved, as an obsession with results can lead to a loss of self-confidence or harmful shortening of the recovery period. The goals that are set can be short-term and long-term. Priority should be given to short-term goals. By achieving these goals successively, athletes regain confidence in their abilities and become motivated to set new goals for themselves [36]. Unrealistic and at that moment unattainable goals create additional pressure on the athlete, which causes frustration and opens the possibility for re-injury. Numerous heterogeneous studies indicate positive cognitive and emotional effects of goal setting in the athlete's psychological sphere, making it one of the most effective and commonly used strategies for psychologically coping with injury [50, 51]. Clinical manifestations in terms of improved mood, increased motivation, self-confidence, self-satisfaction, and self-efficacy, as well as increased commitment to training and therapeutic procedures, are indicators of a significant reduction in the athlete's level of mental burden [38, 48]. All these positive changes greatly facilitate and optimize the athlete's recovery after physical trauma and ensure their successful return to sport.

Visualization (imagination)

Visualization or imagination represents the use of all senses to recreate old or gain new experiences in the mind [52]. It is significant that all of this happens without any visible actions [53]. Visualization is a psychological intervention that is very popular with injured athletes. Monsma et al. found among their subjects that 68% of them use some form of visualization during rehabilitation [54]. The main significance of visualization lies in preparing both the body and mind of the injured athlete for healing and a complete return to sport [55]. In doing so, the athlete feels like an active participant in their recovery and that they have control over the situation [16]. The positive images created during visualization are also used to neutralize images of negative experiences. Repeated images of movements and situations that led to injury in athletes cause anxiety about re-injury and slow down their return to sport [56]. However, creating an image of performing the action while successfully avoiding



injury contributes to a faster return to competition and maximum physical exertion without the fear of injury [27].

Based on the works of other authors, Walsh concluded that during recovery from injury, 4 types of visualization are used:

1. healing visualization,
2. pain visualization,
3. rehabilitation process visualization, and
4. motor visualization [57].

Visualization of healing involves creating images of the injured segment recovering. To make this intervention as effective as possible, the athlete needs to be thoroughly informed about all aspects of the injury, its healing processes, and medical procedures [27, 45]. The positive effect of created images can be enhanced by simultaneously stimulating other senses, such as stimulating auditory neurons by listening to light music [58]. Pain of varying intensity, which is present in almost every sports injury, can be a significant limiting factor in an athlete's physical and psychological recovery from injury [59]. Athletes most often use techniques to try and create an image of themselves as pain-free individuals [57]. Creating an image of the different segments of rehabilitation itself helps the injured athlete adhere to the planned exercise program, as well as overcome unforeseen obstacles in order to continue rehabilitation [47, 60]. Motor imagery is defined as the process of mental simulation in which movement representations are voluntarily created but without their actual execution [61].

Positive internal dialogue

By analyzing a larger number of existing definitions of self-talk, it can be concluded that it is presented through statements or requests that a person makes to themselves [62]. According to Theodorakis et al., there are two types of statements: instructive and motivational [63]. While instructive statements tell an individual what they should do, motivational statements serve to encourage them to do it [62]. Most sports coaches, psychologists, and athletes believe that self-talk has positive effects on attention and emotions, which is why it has found widespread application in sports to improve performance and the mental status of injured athletes. According to its content, self-talk can be positive and negative [64]. In the early stages of recovery, positive self-talk can help an injured athlete manage pain [65]. A positive approach to injury reduces the athlete's anxiety and allows them to more easily accept the fact that they are injured and will be out of sport for a certain period [45, 65]. This will also make their return to sport faster and more efficient [47]. During the rehabilitation phase, self-talk can help an injured athlete overcome negative emotions [fear, anxiety, and depression] which can significantly hinder the completion of the rehabilitation program. Negative self-talk is most often spontaneous and uncontrolled, associated with negative emotional states and demotivation, which can all significantly contribute to the negative development of the injury recovery period [67]. One of the most significant roles of positive self-talk is to help athletes recognize negative self-talk and reframe it into positive self-talk, or to counteract its harmful effects [45, 65].



Social support

Recognizing the need to help injured athletes cope with accompanying stress and stressors during injury recovery [68] has led to numerous studies on the importance of social support in these processes [69]. The results of these studies show that more than 80% of injured athletes seek social support during recovery, and that it represents the most consistent psychological intervention during the recovery period [70, 71]. Generally, according to Yang et al., social support during the rehabilitation process alleviates the injured athlete's suffering, helps them maintain focus on recovery, and preserves their motivation to return to sport [70]. From numerous definitions of social support, it follows that it represents social interaction between people, i.e., between recipients and providers of help [68, 72]. In the process of recovering from an injury, the recipient of assistance is the injured athlete with their perception of the effectiveness of the assistance provided. Help providers include all individuals (sports coaches, doctors, physiotherapists, sports psychologists, clinical psychologists, teammates, friends, and family members) who are perceived positively by the athlete in communications about their recovery [18, 71, 73]. Yang et al. just point out that the level of social support can be measured by the number and quality of people a person can rely on and depend on during the recovery period [73]. Providing social support to athletes during recovery should be continuous, with regular reevaluation of its form and intensity [28, 75]. Crisis periods when support needs to be intensified are considered to be: the period immediately after an injury, setbacks in progress during the rehabilitation phase, and certainly, the period of returning to sport [76].

The majority of authors primarily focus on and consider the three types of social support available to an injured athlete to be the most significant:

- emotional support,
- informational support, and
- tangible support [68, 77].

Emotional social support is provided by individuals the injured athlete trusts when discussing their problems, and it is based on careful listening and offering advice to the athlete with maximum care, understanding, and empathy [68, 78, 79]. Emotional support is generally necessary throughout the entire recovery process [70]. It should be used immediately after the injury to mitigate the negative effects of stress [70], during the rehabilitation phase to combat depression due to potential stagnation in progress [80], and during the return to sport in response to existing pressures from coaches, teammates, and fans for the injured athlete to return to sport as quickly as possible [66]. After the initial stress of the injury, informational social support gains importance in terms of familiarizing the athlete with all the elements of the injury itself, as well as with the types of treatment and the duration of recovery. This type of social support should be present throughout the entire recovery process, and especially during the return-to-sport phase [80]. The most significant sources of emotional and informational social support are coaches and physiotherapists. Tangible support focuses on how others provide assistance and resources to cope with a stressful event [68]. Tangible (material, instrumental) support includes all procedures and resources made available to the injured athlete in dealing with their injury [81]. This type of support is most often provided by family members and friends



and manifests itself through financial assistance, transportation, and help with household and other tasks [49].

Conclusion

The biggest problem for any athlete is getting injured, which leads to a break in their participation in the competition. Throughout the entire recovery period and the return to sport in the injured athlete's mind, there is a struggle between a high level of motivation and the desire to return to sports activities as soon as possible, on the one hand, and, on the other, negative thoughts, emotions, and behaviors that can significantly slow down that recovery. It is also not uncommon for an athlete to be unable to return to pre-injury performance levels due to psychological factors. Returning to sports without being fully psychologically ready poses a high risk of new injuries or the recurrence of old ones. From everything mentioned above, it is clear that the presence of a psychologist in the team dealing with the injured athlete's recovery and the application of psychosocial interventions is imperative in modern sports medicine. In psychological work with athletes, an individual program is essential, encompassing many factors, including the specificity of the sports injury and the personality of the injured athlete. Unfortunately, although numerous studies over several decades have confirmed the significant role of psychological factors in injury recovery and return to sport, there is no consensus among authors in defining a single global model of sports injuries. Further research should focus on establishing a comprehensive model that, in addition to injury elements, would also include and address all present psychological factors as variables, from which guidelines for effective psychological treatment of the injured athlete would emerge, leading up to their successful return to sport.

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