



## ROLE OF PSYCHOLOGICAL FACTORS AND INTERVENTIONS IN PREVENTION OF SPORT INJURY

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### ABSTRACT

*Incidence of sport injury could not be avoided but undoubtedly efforts may be implied to reduce their number. There are numerous causes of sport injury which includes improper warm-up, cool down, musculoskeletal problems e.g. less flexibility, weak muscles, muscular imbalance, neuromuscular problems, co-ordination problems, and technique related causes as improper playing technique, lack of knowledge regarding rules, lack of safety measures and safety devices. Besides these factors the role of fitness trainer, coach, and team-mates could not be ignored in the occurrence of sport injury. Sport injury may range from acute to chronic injury with mild, moderate and severe intensity. The athlete experiences pain and other musculoskeletal related problems due to injury, but more importantly the injury has an impact not only on the physical condition but also on the psychological variables. The injured athlete has fear for remaining out of competition and at times get totally devastated. Thus, there is a strong need to focus on sport injury prevention strategies to optimize the sport performance and to lengthen the athletic career. Keeping all these points in mind, the present review paper has been framed in order to outline the best strategies which could be coupled with sport to reduce the occurrence of sport injury.*

**Keywords:** Sport injury, psychological skills, prevention, optimization, sport performance.

### INTRODUCTION

Participation in physical activity is not devoid of injuries. Undoubtedly there has been significant upgradation in the use of sports equipment along with enhanced knowledge of

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prevention and management of injuries. Despite of all this, the frequency as well as detection of new injuries is on the rise (Renstrom, 1991). Most of the physically active persons encounter injury at some point of their active lifestyle. Increased incidence of sports injuries has been reported in intercollegiate athletes (Meeuwisse & Fowler, 1988). In the study conducted by Booth (1987), it was mentioned that around 17 million sport injuries occur annually in United States.

Sport injury not only affects musculoskeletal system but also lends an impact on psychological well-being of an injured athlete. This in turn would influence health, sport performance and increases the risk of re-injury (Heil, 1993). Despite of all these effects of sport injury, injured athletes still depends primarily on physical aspects of prevention and rehabilitation. Research reflects that injury prevention or coping with sport injury may be influenced by self-concept, beliefs, commitments, values and socio-economic functioning (Danish, 1986; Hardy & Crace, 1993). Empirical findings exhibit that avoidable injuries also occur and both prevention and recovery from sport injury gets compromised due to failure to deal with psychological aspect along with physical aspects (Andersen & Williams, 1993; Faris, 1985; Heil, 1993). During the last decade the research has given emphasis to the psychological and sociological constructs that play a vital role in prevention and rehabilitation of sport injury. Nevertheless, the field of medicine and physiotherapy give only a tertiary impression regarding the importance of psychology in sport injury (Crossman, 1997).

### **Purpose:**

The main purpose of the present review paper is to thoroughly look into the research based on prevention strategies for sport injury. It was intended to comprehensively substantiate essential components of preventive programs, foundation of intervention based studies, case studies, theoretical bases and supportive literature, strengths and weaknesses of existing literature and their clinical relevance. As research exhibits preliminary evidence for treatment effectiveness in psychological interventions, further empirical enquiry is needed.

**Sport Injury:** The incidence of sport injury is quite taxing to the athlete and is associated with array of risks, undesirable health outcomes and consequences, especially in high-intensity sport. A multidisciplinary approach is required to thoroughly recognize risk factors, response and recovery pattern in relation to sport injury. Certain sport such as short-duration high-intensity sport demands high training volume, high repetitions, increased pain tolerance, all-out burst effort, contact with opponent, other physical hazards etc. These are linked with



occurrence of sport injury as well as associated with related health risks like overtraining, burnout, and disordered eating (Hoot-man et al., 2007).

Estimation of sport injury: For accurate surveillance of sport injury and to obtain estimation of sport injury, three elements are necessary: risk measurement i.e., number of athletes at risk to injured athlete ratio, rate of injury, i.e. incidence versus exposure and those seeking medical care.

The role of psychological and socio-cultural factors could not be overlooked in above mentioned three elements. Risk taking behavior has a dependence on nature of sport chosen and the type of personality going with respective sport, e.g. athletes seeking high sensations go with risky sport or adventurous sport choices. Rate also has inkling to psychosocial factors as it get affected by competitive play, e.g. when a child athlete transits from lower level to intense talent development stage. Psychosocial factors also play a role in treatment as athlete may overlook injury in quest to stay in the game (Hodgson et al., 2007). The pertinent elements of investigation related to sport injury include: whether injury occurred during training or competition, whether medical care was sought and what was the time loss from practice, training or competition (Hoot-man et al., 2007).

Aetiological Factors: The aetiology and classification of sport injury has a multitude spectrum from microtrauma, macrotrauma to chronic injury. The microtrauma includes overuse or cumulative trauma over a span of time, macrotrauma includes acute or any specific trauma event and chronic sport injury includes unremitting or recurring injury with structural damage, may be in the form of chronic tendinitis or chronic ankle sprain (Wiese-Bjornstal, 2010).

Besides physical aspect, the research has pinned upon the role of psychosocial factors in sport injury. It has been noticed that in case of young athletes who are training hard, there is exponential rise in cases of sport injury in the form of microtrauma (overuse injuries), which otherwise is not noticed in case of young athletes. This has been attributed to excess of pressure either from parents or coach. Nowadays, the concept of specialization in sport has been demanding on an athlete in the form of overtraining and burnout. Further, coaches with improper training and inadequate recovery intervals lead to risk of sport injury and related health and sport performance outcomes (Wiese-Bjornstal, 2010).

The nature of sport, i.e. team sport, power sport or sport requiring high intensity exercise also put the athlete at risk for macrotrauma, orthopaedic or even brain injury. Research has indicated that most of these injuries are not purely due to physical reasons but has



underpinning psychological and sociological processes. This may be a result of ignoring pain and injury in order to display a tough personality or in quest of leaving a good impression and more importantly to have a successful performance. An injured athlete may sacrifice health and do whatever possible for winning. If the injury has become chronic, it also lends psychosocial impact in the form of anxiety, low confidence and problems in interpersonal relations. This may be seen during training, competition or post-career life and exert impact on quality of life and functional independence (Wiese-Bjornstal, 2010).

Pre-injury etiology, risks, and protections: Numerous pre-injury conceptual models have provided framework to establish the interconnections between various factors, e.g. Biomedical based models (Meeuwisse et al., 2007), models based entirely on psychology (Andersen & Williams, 1988), and Biopsychosocial models (Wiese-Bjornstal, 2009). The factors related with risk, etiology and occurrence of sport injury reflect interaction of internal biological factors, psychological characteristics, extrinsic physical factors, activity of athlete and socio-cultural factors. Sport injury occurs as a result of some cause based on behavioural characteristics taking into account the inherent risk involved in sport training and competition, as well as vulnerabilities of an involved athlete for exposures, choices and hazards (Meeuwisse et al., 2007). Literature also indicate that to comprehensively understand the aetiological profile of sport injury, focus should not be only on the risk factors or mechanism of injury but other protective factors as well as to thoroughly understand the principles behind no injury. The protective factors include psychological and socio-cultural protective factors like proactive coping, coping skills which act as preventers or buffers to stressful life events along with biological and environmental factors (Meeuwisse, 2009).

Life Stress: Research indicates that life event stress has been associated with pre-injury status. According to theoretical implications of Andersen and Williams' (1988) Model of Stress and Athletic Injury, a major life event stress has been defined as the perceived strain linked with major life stressors, e.g. death in a family, especially the impact of negative life events (Andersen and Williams, 1988; Williams & Andersen, 1998). This is one of the most consistent factors which have been reported to be the predictor of sport injury, e.g. studies conducted on young female football/soccer players' exhibit high perceived strain level as a result of impact of negative events. This is more so true in those cases who report low self-esteem, few coping skills or low social support. Even the minor stressful events which include day to day hassles also have implication in the cumulative stress and sport injury (Steffen et al., 2009).



**State of Mood:** Research exhibits correlation with mood state and incidence of sport injury. Pre-injury negative mood has been linked with high levels of fatigue, low vigor and higher sport injury incidence (Smith et al., 1997).

**Socio-cultural influence:** The socio-cultural factors also play a major role in the incidence of sport injury i.e., social pressures (Murphy & Waddington, 2007), institutional stressors (Fletcher & Hanton, 2003), ethical issues related to health and sport performance (Mathias, 2004), and willingness to sacrifice ethics and use drugs to mask pain (Tricker, 2000), and aggression or illegal behavior while playing (Collins et al., 2008).

**Other Psychological factors:** The other psychological factors like type of personality (Deroche et al., 2007) and risk taking behavior (Bovard, 2008) are also associated with incidence of sport injury. The high intensity loading leading to physiological stress (Galambos et al., 2005), over-training, association with perfectionist attitude, personality with high achieving nature, eating disorders are all associated with sport injury (American College of Sports Medicine, 2007). The deficits in neurocognitive function due to concussion, brain injury may lead to further sport injury because of deficient cognitive, motor, neuromuscular and co-ordination elements (Jantzen et al., 2008; Swanik et al., 2007).

**Psychological interventions:** Research findings from the intervention studies have suggested that athletes who used psychological skill training adapt to recovery better. The strategies like biofeedback control very closely involve the injured athlete into the recovery process as well as to have control over their bodies. Control is a very critical component in the injury prevention and rehabilitation programs (Davis, 1991; Kerr & Goss, 1996; Ross & Berger, 1996). Research outcomes exhibit mood, goal setting, type of personality, social support, imagery and injury severity as factors in injury intervention programs (Brewer, 2010).

Also, it is more so important that the staff dealing with the injured athlete should be well equipped with the techniques ranging from educational issues to psychotherapy from prevention and rehabilitation point of view (Danish, Petitpas, & Hale, 1992; Heil, 1993). The pre-injury stress management programs which act as prophylaxis also shown to have lead to reduction in number of reported sport injury (Perna et al., 2003), especially when used with players with high risk of injury (Maddison & Prapavessis, 2005). The other strategies are counseling (Gutkind, 2004), and social support (Bianco, 2001). The factors associated with coach includes lesser tolerance for risky behaviors, reduced advocacy, overtraining, wrong estimation of ability and improper mechanics (Rebella et al., 2008) also play a key role in sport injury prevention strategies (Wiese-Bjornstal, 2010).



Role of sports psychology: It was suggested that there are four prominent roles of sports psychologist in a medical set-up, i.e. thorough assessment, effective communication skills, learning and dissemination of psychological skills and effective social support set-up (Brewer et al., 1991).

### Clinical Significance/Discussion:

It is pertinent to mention that psychological interventions help reduce the incidence of injury. Further, these interventions along with conservative treatment regime lead to faster recovery, better mood profile, sport effort and performance optimization, reduction in levels of pain, anxiety and stress (Cupal, 1998). The psychological interventions take into cognizance the individual differences, leading to specific coping skills, individual centric social support and intervening individual specific biofeedback techniques for stronger mind-body connection in prevention of sport injury. Empirical efforts may be directed towards individual centric actual intervention techniques and cognitive strategies for observable and concrete results of preventive strategies.

### CONCLUSION:

Based upon the literature it could be stressed upon that there is a stringent need to match the incorporation of psychological technique in relation to individualistic need in prevention of sport injury. There is a strong need to conduct intervention studies for logical and systematic appraisal of psycho-social interventions in prevention modules of sport injury.

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