

# Injured Athletes and a New Invention of Relaxation Techniques

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**Abstract**—Sport injuries threaten athletes' career and success. An injury does not affect exclusively physical capabilities, but also contextual and psychological aspects. An injured athlete will experience a range of stressors associated with the competitive and organizational environment. These stressors can be temporally defined across three phases of injury: onset, rehabilitation, and return-to-play. Athletes may experience similar psychological reactions similar to Kubler-Ross's FIVE stages of grief: Denial, Anger, Bargaining, Depression and Acceptance. Relaxation techniques such as breathing, progressive muscle relaxation, and meditation are useful strategies to help with emotional regulation and hereby promoting optimal healing and timely return-to-play. The new invented relaxation technique: Aqua Relaxation Technique will be another option to help the athletes to speed up the healing process by reducing pain and stress.

**Keywords**— Injured Athletes, Psychological Responses, A New Relaxation Technique.

## I. INTRODUCTION

Injury in any walk of life often means some form of alteration to daily living. In a sporting context, athletes spend thousands of hours in training, despite this, or because of, they have a risk of injury higher than normal exercisers (Brewer, 2009). Sport injuries threaten athletes' career and success (O'Connor et al., 2005). An injury does not affect exclusively physical capabilities, but also contextual and psychological aspects. In fact, in some situations, injuries can deprive athletes of their compensation increasing life-stress, and determine fear to re-injury, sensation of loss, negative emotions, and other mood disturbances (Naoi & Ostrow, 2008).

The negative impact of injury depends only in part on how much time athletes have spent in sport: high performers, who have a stronger athletic identity, experience major feeling of loss and mood disturbance. However, the high performers also have a better reaction to the injury, probably because they have more psychological resources to cope the situation (Rees, Mitchell, Evans & Hardy, 2010).

Nevertheless, the emotional experiences associated with athletic injury highlight the struggle some athletes encounter when injured and emphasize the need to actively assist athletes in overcoming the psychological hardships of athletic injury. Traditionally the main focus for injury rehabilitation has been the physical aspects of recovery. With marked improvements in training methods, physical conditioning and overall sports science knowledge the incidence of athletic injury can be reduced however the prevalence of injuries in sport still remains.

An injured athlete will experience a range of stressors associated with the competitive and organizational environment (Podlog & Eklund, 2007a, b). These stressors can be temporally defined across three phases of injury: onset, rehabilitation, and return-to-play (Evans, Wadey, Hanton, & Mitchell, 2012). Research that has explored the temporal pattern of injured athletes' responses has suggested that

stressors at injury onset include incapacitation and isolation, during rehabilitation, lack of rehabilitation progress and setbacks, and during the return-to-play, risk of re-injury, and loss of fitness and pre-injury performance levels (Evans et al., 2012).

The results from numerous empirical studies have confirmed that the psychological aspects of injury rehabilitation need to be considered and the sport medicine professionals has an important role in ensuring that the athlete is both physically and psychologically ready to return to competition. By considering the psychological aspects of injury rehabilitation it is hoped that the strength and conditioning coach will consider all aspects of the recovery process and expedite the athletes to return to competition. The use of psychological skills such as goal setting, imagery and relaxation techniques can decrease injury rehabilitation times by increasing the athletes coping skills and overall motivation. These techniques can be easily implemented by the sport medicine professionals and it will assist in ensuring the athlete is physiologically and psychologically ready to return to their sport.

## II. PSYCHOLOGICAL RESPONSES OF INJURED ATHLETES

Besides the physical performance loss that can result from an injury, the athlete may also be psychological distress placed upon the athlete. Common responses to injury include sadness, feelings of isolation, irritation, lack of motivation, frustration, anger, alterations in appetite, sleep disturbance, and feeling disengaged. Psychological distress is to influence the athlete's adherence to rehabilitation protocols (Williams et al., 2001). Athletes who are experiencing distress surrounding their injuries may attempt to hasten their recoveries in an attempt to return quickly to their roles as sportspeople. Alternatively, injured athletes may avoid rehabilitation protocols because they raise uncomfortable or painful sensations (both physically and psychologically). In either case, limited adherence to a rehabilitation protocol jeopardizes the likelihood of a

successful recovery and places athletes at greater risk of re-injury upon returning to full sport participation.

Athletes may experience similar psychological reactions similar to Kubler-Ross’s five stages of grief. The athlete when injured has to deal with considerable change and this change involves loss at some level for the athlete. The Kubler-Ross model, commonly known as the FIVE stages of grief, was first introduced by Elisabeth Kübler-Ross in her 1969 book, *On Death and Dying*.

The progression of states

Stage	Interpretation
Denial	"I feel fine."; "This can't be happening, not to me." Denial is usually only a temporary defence for the individual. This feeling is generally replaced with heightened awareness of situations and individuals that will be left behind after injured.
Anger	"Why me? It's not fair!"; "How can this happen to me?"; "Who is to blame?" Once in the second stage, the individual recognizes that denial cannot continue. Because of anger, the person is very difficult to care for due to misplaced feelings of rage and envy. Any individual that symbolizes life or energy is subject to projected resentment and jealousy.
Bargaining	"I'll do anything for a few more years."; "can I go back and play now" The third stage involves the hope that the individual can somehow postpone or delay death. Usually, the negotiation for an extended life is made with a higher power in exchange for a reformed lifestyle. Psychologically, the individual is saying, "I understand I will die, but if I could just have more time..."
Depression	"I'm so sad, why bother with anything?"; "I'm going to die... What's the point?" During the fourth stage, the dying person begins to understand the certainty of death. Because of this, the individual may become silent, refuse visitors and spend much of the time crying and grieving. It is not recommended to attempt to cheer up an individual who is in this stage. It is an important time for grieving that must be processed.
Acceptance	"It's going to be okay."; "I can't fight it, I may as well prepare for it." In this last stage, the individual begins to come to terms with their rehabilitation program.

The sport medicine professionals have an important role in the psychological recovery of the athlete, the aim is to help the athlete identify, accept and respond to the injury in a positive manner. Those athletes who accept injury as a challenge / opportunity have often demonstrated shorter recovery times. The sport medicine professionals can help the athlete psychologically in the following ways:

- Acceptance – The athlete needs to accept the injury so that they can move forward; they also need acceptance from coaching staff and other athletes. They need to view the injury as a challenge and to identify opportunities even though they are injured.
- Control – The athlete needs to feel they have some control over the injury and the treatment process and ultimately control over the outcome of the rehabilitation process.
- Direction – They need to be a clear direction in the rehabilitation process so that the athlete can set out and achieve measurable goals during rehabilitation.
- Assurance – The athlete needs to know from the coaching staff, treating medical professionals, other athletes and social environment that they have their support. They need to be reassured that they can come back stronger than they were before sustaining the injury.

- Commitment & belief – the athlete needs to have a belief in their own healing capacity and a belief in the capabilities of the sports medicine team treating the athlete.
- Success – the ultimate goal of returning to their chosen sport injury free and psychologically prepared to continue with no fear of re-injury.

III. RELAXATION SKILLS AND INJURED ATHLETES

Based on the integrated model of response to sport injury of Wiese-Bjornstal et al. (1998) stated that psychological strategies potentially moderate the resulting negative emotion and behaviour after injury. Practicing psychological strategies, including imagery and relaxation, may help rehabilitating athletes by altering their cognitive appraisal of the event, managing the stressors of recovery (Clement, Granquist, & Arvinen-Barrow, 2013) and thereby promoting optimal healing and a timely return-to-play. Generally speaking, imagery and relaxation strategies have been linked to decreases in pain and re-injury anxiety and to increases in muscular strength during rehabilitation. These strategies have also been shown to increase overall mobility, coordination, and balance and decrease fatigue, depression, and medical costs. Five of the major psychological strategies that have been supported through evidence-based research as being effective for the demands of sport include: goal setting, imagery, self-talk, attentional focus, and stress management techniques such as breathing and progressive muscle relaxation.

In a meta-analysis on relaxation interventions, Meyers et al. (1996) reported a combined effect size of .73 for the 25 studies. Types of relaxation techniques include breathing (focusing on counts, exhales, rhythmic breathing) and progressive muscle relaxation (Meyers et al., 1996). Somatic relaxation is a psychological strategy that incorporates breathing exercises and is important in the healing process to help reduce muscle tension, which is associated with increased pain and inhibited healing. Relaxation strategies also increase blood flow to the brain and skeletal muscles to aid in healing.

Progressive relaxation (PR) was developed by Jacobson (1930) and is a neuromuscular relaxation, which aims to train muscle groups to become sensitive to any level of tension and then release that tension after a short period of time. PR can come in many forms: active PR (i.e., focus on a specific muscle group, tense muscles, then release), differential PR (i.e., muscle groups with different amounts of tension each time), abbreviated active PR (i.e., shorter procedure, done once athletes have learned PR techniques), passive PR (i.e., after learning skills, athletes relax muscles without tensing them), and quick body scan (i.e., abbreviated form of passive PR; Bernstein & Carlson, 1993). Depending on the timing (pre-performance, during competition, post-competition) one type of PR may be more beneficial over another. For example, once the technique of PR has been learned and mastered, doing an abbreviated active PR would work best when there is little time like immediately before a competition. On the other hand, after a stressful practice, differential PR may be more useful to targeting specific tense muscle groups. In the injury-context, progressive muscle relaxation can be used on non-

injured body parts to help the athlete gain a deeper sense of relaxation. For instance, a collegiate athlete recovering from an ACL tear and experiencing stress of a demanding academic year and limited mobility may benefit from progressive muscle relaxation. Progressive muscle relaxation centred on the upper body may be useful for such an athlete who may be storing a lot of tension in areas such as the shoulders and neck from using crutches.

Another relaxation technique is meditation which helps achieve a state of relaxation by focusing attention on a cue word, phrase and breathing. Visualization is sometimes accompanied by meditation to have the athlete fully immerse themselves in a relaxed state. Autogenic training is another relaxation technique, which is a form of self-hypnosis in which attention is focused on the sensations it is trying to produce (Greenspan & Feltz, 1989). In general, there is little research on intervention studies in the sport setting that focus solely on relaxation techniques. Instead, relaxation techniques have been paired with other mental skills techniques such as imagery, goal setting, or self-talk. Goal setting, imagery, and relaxation techniques have been found to be successful skills when working with athletes recovering from injury (Mankad & Gordon, 2010). Such psychological interventions have helped reduce negative psychological consequences, improve coping skills, and reduce re-injury anxiety.

In applying this information, relaxation techniques such as breathing, progressive muscle relaxation, and meditation are useful strategies to help with emotional regulation. An athlete recovering from injury may feel apprehensive to perform some of the rehabilitation exercises as they progressed. Having the athlete focus on breathing mechanics before the exercise is one way of directing the attention internally, thereby inhibiting focus on elements that may deter performance, such as worrisome thoughts or self-doubt.

Meditation can also be used with the injured athlete to help regulate emotions. If an athlete is feeling anxious before performing a sport-related task, mediation can be used to help centre the athlete before performing.

Devoting a short amount of time in which the athlete can close their eyes and focus on thoughts of relaxation or images that evoke a calm sensation, may be a good approach for helping athletes regulate emotions before performing a task. By using these strategies, an athlete can calm down nerves before a competition or use them to focus attention on the present moment rather than internal or external distractions. Relaxation strategies such as deep breathing should be paired with other strategies to help regulate emotions before changing the mind-set.

#### IV. A NEW INVENTION OF RELAXATION TECHNIQUE

A technique growing in popularity is floatation therapy, which is the use of the float tank in which solution of Epsom salt is kept at skin temperature to provide effortless floating. Research in USA and Sweden has demonstrated a powerful and profound relaxation after twenty minutes. In injured athlete cases, floating reduced pain and stress and has been shown to release endorphins.

But, the floatation tank and the Epsom salt used were very costly and maintenance fees of the tank usage was very high, moreover the tank only able for one athlete at one time. At such to obtain the same effects of this relaxation method, we invented the Aqua Floatation method to help the athletes especially the injured athletes to gain the same benefits provided by the floatation tank. The new invented technique: "Aqua Relaxation Technique" has been obtained the Copy Right from the Intellectual Property Corporation of MALAYSIA with the registration number LY2017004673.

Aqua Relaxation Technique



Floatation Tank



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