

Yoga as Part of Sports Medicine and Rehabilitation

In the competitive world of sports and games, injuries are common, often leading to pain, disability, prolonged recovery times, and long-term musculoskeletal issues.^[1] The worst part will be to stay out of active sport and face stiff competition to make a comeback. As a critical component of the recovery process, rehabilitation plays a vital role in an athlete's professional career. There is growing evidence supporting the integration of Yoga as a practical and holistic approach to sports rehabilitation.^[2] This editorial explores the importance of Yoga in sports rehabilitation, highlighting its benefits, mechanisms of action, and practical applications in sports medicine.

The Evolving Concept of Integrative Sports Medicine and Rehabilitation

Sports injuries can have a profound impact on an athlete's career and overall quality of life. The rehabilitation process is essential for restoring physical function and performance, reducing pain, and preventing recurrent injuries. Traditional sports rehabilitation often focuses on strength and flexibility exercises in addition to physiotherapy as the primary intervention.

Integrative sports rehabilitation encompasses various systems of healing, including traditional as well as modern approaches. Naturopathic medicine, Ayurveda, and Traditional Chinese medicine with an emphasis on acupuncture and cupping, along with Yoga therapy, have become the main stakeholders of traditional medicine. However, modern medical and surgical interventions followed by physiotherapy and fitness training along with nutritional supplementation remain as mainstream verticals of sports medicine and rehabilitation. While the scientific literature on integrative sports rehabilitation is limited, various institutions offering sports rehabilitation have introduced complementary and integrative approaches with various treatment methodologies based on their documented benefits or by the demand of an athlete considering the global trends. However, Yoga therapy stands out as a unique and common intervention that works at physical, mental, and emotional planes of recovery.

There is a growing recognition of the benefits of integrating Yoga into rehabilitation protocols. Yoga is an ancient Indian system of mind-body medicine that combines physical postures, regulated breathing, relaxation techniques, and meditation. Yoga showed better outcomes for managing pain, stiffness, and functional subscale of the WOMAC scale when complemented with physiotherapy compared to physiotherapy alone.^[3]

Benefits of Using Yoga in Sports Rehabilitation

Efficient management of psychological trauma associated with a physical injury

Sports injuries, although primarily physical in nature, are commonly associated with deep-rooted psychological trauma. Athletes experience traumatic stress and emotional imbalance, leading to bouts of anxiety and depression. Yoga operates primarily at the mental level through breathing, relaxation, and counseling. Resonance breathing, chanting, and imagery techniques have been shown to facilitate healing. Yoga also promotes the conversion of negative emotions to positive emotions, motivates athletes to remain optimistic, and encourages them to participate in the process of rehabilitation actively.^[4]

Enhanced strength, flexibility, balance, and range of motion

Yoga improves flexibility and range of motion in addition to balance and strength,^[5] which are of paramount importance in sports rehabilitation. By engaging in yoga postures that target specific muscle groups and joints, athletes can gradually increase their range of motion. Hence, postures are particularly beneficial for athletes with joint-related injuries or sore muscles. Yoga involves holding various poses that require the activation of multiple muscle groups simultaneously. Postures increase muscular strength and improve balance, helping athletes regain physical stability after injuries.

Pain management

Pain is a common issue in sports rehabilitation. Pain associated with physical injury is accompanied mainly by habitual deep muscle tension that adversely affects microcirculation within muscles and the underlying viscera. A sedentary lifestyle further aggravates pain, lack of exercise, and poor posture.^[6] The mind-body approach of Yoga or meditation encourages relaxation and mindfulness, which can help athletes manage pain perception and reduce the intensity. Breathing techniques, meditation, and relaxation postures are practical tools in this regard. It was also reported in a recent randomized controlled trial that yoga interventions reduced pain and improved psychological well-being in injured athletes.

Prevention of recurrent injuries

The multidimensional approach of Yoga, which operates through both physical and psychological aspects of recovery, can help athletes build resilience, acceptance, and awareness. The integrated Yoga program can lead to a reduced risk of recurring injuries as athletes learn to

understand their bodies better and make adjustments to their training routines and techniques. Yoga also helps augment the beneficial effects of routine training and strengthening activities and empowers athletes with effective coping strategies.

While it can be speculated that the use of Yoga can probably bring all those scientifically validated benefits seen in healthy individuals to athletes undergoing rehabilitation, certain applied benefits were identified that can add value to the rehabilitation process, which include but are not limited to.

Strengthening and enhanced proprioception

Yoga-based loosening and strengthening exercises followed by postures often involve deep stretching, which can help alleviate muscle tightness and joint mobility. Enhanced joint position sense contributes to optimal balance and the ability to initiate and end musculoskeletal activity voluntarily. Simultaneously, these postures engage muscles, providing strength training benefits.

Stress reduction through mind–body connection

Yoga encourages a solid mind–body connection. Athletes learn to listen to their bodies and become more aware of their physical limitations and needs. Yoga practices, such as meditation and controlled breathing, can activate the body's relaxation response, reducing stress and promoting overall well-being. Stress reduction is also known to influence the inflammatory process positively and facilitate the healing process effectively.

Improved circulation and optimal oxygen uptake

Yoga stimulates blood flow to various parts of the body, facilitating the delivery of essential nutrients to injured tissues and the removal of metabolic waste products. Breathing techniques, in particular, enhance oxygen supply and uptake. Meditation is also shown to improve cortical blood flow in the areas concerned with attention, memory, and emotions.

Proposed Means of Integrating Yoga into Sports Rehabilitation

Integrating Yoga into sports rehabilitation programs requires careful planning and personalized approaches based on the athlete's specific injury and needs. It is desirable to develop integrative rehabilitation programs, including Yoga, with particular emphasis on the following domains.

Yoga as part of warm-up and cooling-down activity

Yoga can be incorporated into pre- and post-workout routines, which can help athletes prevent injuries and promote recovery. In an attempt to mitigate the antecedents of sports-related injury through Yoga, the authors of a recent study showed that Yoga can be successfully integrated into the training program of soccer players. The

results supported the potential use of a yoga intervention to mitigate two significant precursors of injury, namely, perception of propensity to sustain injury and generalized fatigue.^[7]

Customized injury-specific programs

Yoga programs have to be designed to address the unique requirements of athletes with different injuries. For example, poses focusing on hip flexibility may benefit runners with hip injuries; shoulder strengthening and loosening poses with breathing help athletes with rotator cuff injuries. In contrast, spinal stretching poses, in addition to breath holding and deep breathing, can be emphasized in swimmers who intend to get back after an injury. It is also evident from a recent study that showed the possibility of successfully integrating Yoga into the customized rehabilitation program of a professional skier with physical therapy. The combined intervention improved flexibility, muscle strength, stability, and balance of the injured athlete. In addition, the perceived usefulness of the customized yoga-based rehabilitation program was also shown to influence adherence to rehabilitation and conscious participation in the rehabilitation program.^[8]

Mental resilience training

Meditation, Chanting, or resonance breathing sessions as part of rehabilitation can help athletes develop mental resilience, aiding their recovery and long-term performance. Resilience indicates an individual's ability to withstand or recover quickly from a stressful situation. Apart from sports injuries, athletes also suffered during the COVID-19 pandemic. A study conducted with the Yoga of Immortals program for athletes under stress demonstrated that 4 weeks of Yoga has improved various indices of resilience and reduced signs of stress in athletes.^[9]

Team yoga sessions

It is essential to emphasize group yoga sessions to foster a sense of community and support among injured athletes, reducing the psychological impact of isolation. It motivates depressed athletes and encourages them to take initiative and remain optimistic.

Conclusion

Yoga offers a holistic and multifaceted approach to sports rehabilitation, addressing both physical and psychological aspects of recovery. The integration of Yoga into rehabilitation programs is supported by clinical evidence and by demonstrating its effectiveness in enhancing flexibility, strength, balance, pain management, and psychological well-being. As the sports medicine field continues to evolve, incorporating Yoga as a complementary therapy in rehabilitation protocols can significantly benefit athletes on their path to recovery and improved performance. Further research is warranted to explore the optimal timing, frequency, and types of yoga interventions

for different sports-related injuries, thus providing more precise guidelines for its application in sports rehabilitation.

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References

1. Cumps E, Verhagen E, Annemans L, Meeusen R. Injury rate and socioeconomic costs resulting from sports injuries in Flanders: Data derived from sports insurance statistics 2003. *Br J Sports Med* 2008;42:767-72.
2. Brewer BW. The role of psychological factors in sport injury rehabilitation outcomes. *Int Rev Sport Exerc Psychol* 2010;3:40-61.
3. Rai SK, Gupta TP, Gupta GK, Kale AB, Arora R, Kumar D. Comparative study of role of physiotherapy alone versus physiotherapy combined with yoga in rehabilitation after a sports injury. What can a primary physician offer? *J Family Med Prim Care* 2022;11:7691-9.
4. Kanaujia S, Saraswati P, Anshu, Singh N, Singh S, Kataria N, *et al.* Effect of yoga and mindfulness on psychological correlates in young athletes: A meta-analysis. *J Ayurveda Integr Med* 2023;14:100725.
5. Polsgrove MJ, Eggleston BM, Lockyer RJ. Impact of 10-weeks of yoga practice on flexibility and balance of college athletes. *Int J Yoga* 2016;9:27-34.
6. Vallath N. Perspectives on yoga inputs in the management of chronic pain. *Indian J Palliat Care* 2010;16:1-7.

7. Arbo GD, Brems C, Tasker TE. Mitigating the antecedents of sports-related injury through Yoga. *Int J Yoga* 2020;13:120-9.
8. Ravi S. Customized sports injury rehabilitation with yoga and physiotherapy for a – 12-week rehabilitation progress of an injured young alpine skier. *Br J Sports Med* 2016;50:e4.
9. Shivanand I, Dewan N, Kathuria H, Verma S. Online Yoga Instruction Improves Resilience in Athletes During the COVID-19 Pandemic. Preprints; 2022.

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