

# Physical Rehabilitation in Minor Traumatic Injury or Concussion

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## Abstract

### Keywords

- ▶ concussion
- ▶ mild traumatic brain injury
- ▶ physical rehabilitation
- ▶ physiotherapy

Concussion is a traumatic brain injury and can be caused by sports and non-sports related injuries. Most patients recover completely within days to several weeks; but, some patients continue to experience postconcussion symptoms including but not limited to headache, dizziness and neck pain. The mainstay of treatment for concussion in sports has been physical and cognitive rest until the acute symptoms abates. However, the window period for rest is currently being debated. For patients with persisting symptoms, longer than 1 month, multidisciplinary team approach is advisable. There is emerging evidence for the role of physical therapy as a treatment option in this population, especially for postconcussion symptoms.

## Background

Mild traumatic brain injury (mTBI) and concussion are often used interchangeably in the literature. The research in the area of mTBI/concussion has grown substantially over the past few years, especially in the western countries. Concussion is defined as physiological disruption of brain function resulting from traumatic force transmitted to the head. While the diagnosis of concussion is often related to a sport injury, however, any form of trauma can be the cause.<sup>1</sup> mTBI is the most prevalent type of head injury and accounts for 80 to 90% of all head injuries in India.<sup>2</sup> mTBI is defined by a Glasgow Coma Scale score of 13 to 15 and limited posttraumatic amnesia usually lasting for less than 24 hours.<sup>1</sup> Traditional neuroimaging techniques such as computed tomography scan and magnetic resonance imaging are almost invariably normal after concussion. However, these techniques are vital in ruling out more serious pathology (e.g., cerebral bleeding, skull fracture) that may accompany with head trauma.<sup>3</sup>

For a better understanding, the symptoms of mTBI/concussion can be categorized according to the following domains<sup>3</sup>:

- *Physical*: headache, nausea, vomiting, blurred or double vision, balance problems, dizziness, sensitivity to light or noise, tinnitus.
- *Behavioral/emotional*: drowsiness, fatigue/lethargy, irritability, depression, anxiety.
- *Cognitive*: feeling “slowed down,” feeling “in a fog” or “dazed,” difficulty concentrating, difficulty remembering.
- *Sleep disturbances*: difficulty falling asleep, fragmented sleep, too much/too little sleep.

In most cases (~80–90%), patients who experience concussion, regardless of cause, will recover fully typically within days to several weeks. However, there remain a percentage of people (10–15%) who will continue to experience persisting symptoms, such as posttraumatic headache, balance problems, neck pain, cognitive impairments, fatigue, and mood disorders, even after 1 year.<sup>1,4</sup> Persistence of symptoms beyond the generally accepted time frame for recovery may herald the development of what is termed *postconcussion syndrome*, which has been a controversial diagnosis with a wide differential diagnosis.<sup>5</sup> These remaining symptoms following mTBI can cause functional limitations,

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heightened emotional distress, and delayed return to work or school.<sup>4,6</sup>

## Management

The cornerstone of concussion management in sports has been physical and cognitive rest until the acute symptoms resolve and then a graded program of exertion. Unfortunately, little is known about the optimal window period for rest and the initiation of activity following concussion. Additionally, the recommendations for rest until a patient is asymptomatic after sports concussion are currently being debated.<sup>7</sup> It is believed that prolonged rest, especially in athletes, can lead to physical deconditioning, metabolic disturbances, and secondary symptoms such as fatigue and reactive depression. The current updated guidelines suggest an initial 24 to 48 hours period of rest in the acute symptomatic period following injury.<sup>1</sup> A sensible approach involves the gradual return to school and social activities (prior to contact sports) in a manner that does not result in a significant exacerbation of symptoms. Patient education about symptoms and expected outcomes, reassurance, and techniques to manage stress have a significant role in overall management of mTBI.<sup>1,7</sup>

The recent consensus statement on concussion in sport advised that persistent symptoms should be managed by a multidisciplinary team of health care professionals. The therapies including cognitive, physical, psychological and vestibular should be considered as part of a comprehensive rehabilitation program.<sup>1,4,8</sup> Cervical spine physiotherapy and vestibular rehabilitation may facilitate recovery in individuals with persistent symptoms of dizziness, neck pain, and headaches and may be considered as a treatment option. Aerobic exercises have also been found to be effective in

certain patients.<sup>5,9</sup> Overall, the current literature examining exercise as a treatment modality postconcussion, and in particular persistent postconcussion symptoms, appears positive.<sup>6,8,9</sup>

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