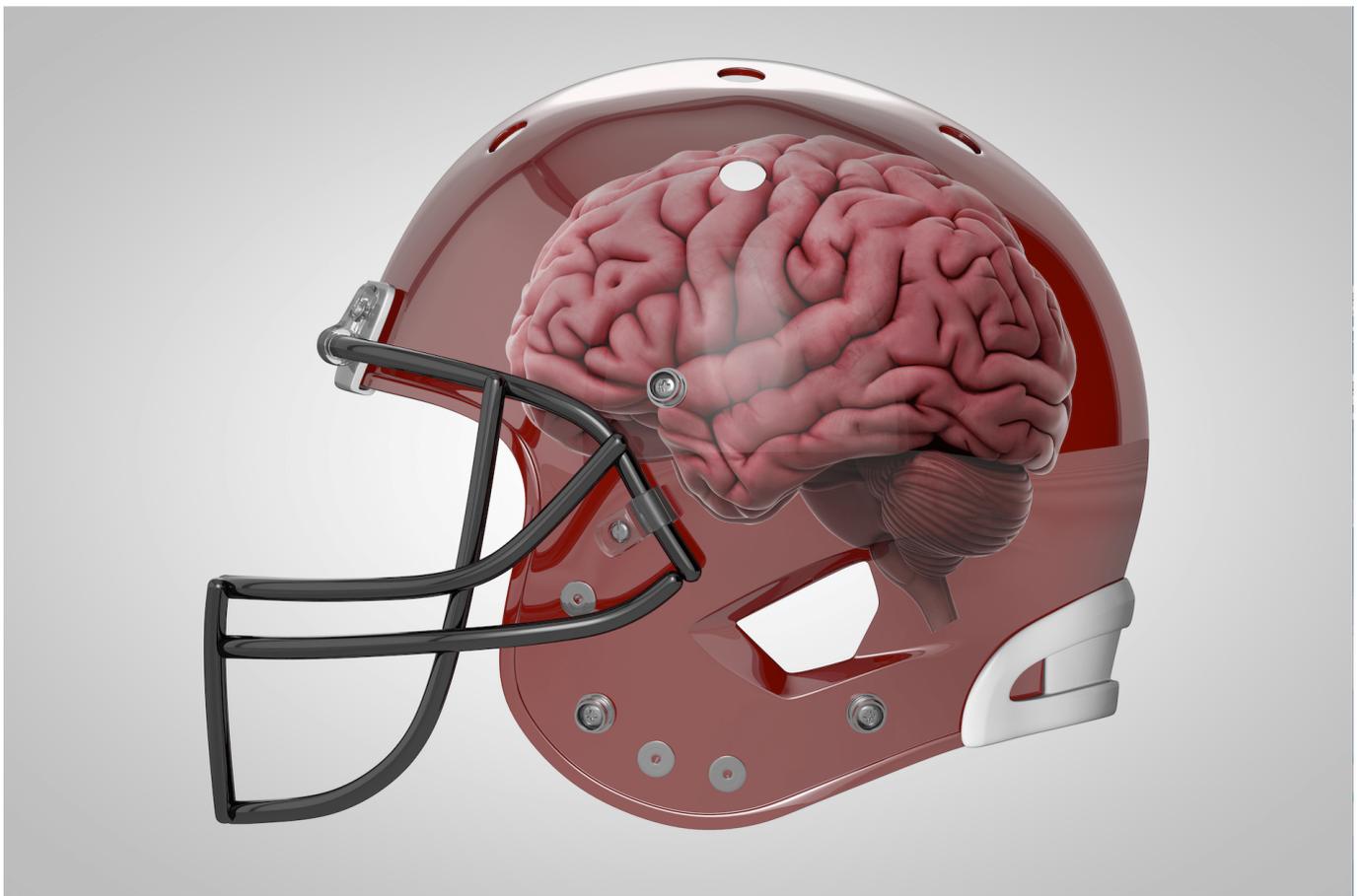


SHORT ARTICLE

# Psychiatric aspects of Traumatic Brain Injury in professional sports

CONCUSSION / DEPRESSION / NEUROLOGY



**Deutschmann Markus<sup>1</sup>, Dewey Maryse<sup>2</sup>, Langer Martina<sup>1</sup>, Seifritz Erich<sup>1</sup>, Claussen Malte Christian<sup>1,2,3</sup>**

<sup>1</sup>Department of Psychiatry, Psychotherapy and Psychosomatics, University Hospital of Psychiatry Zurich, Zurich, Switzerland

<sup>2</sup>Private Clinic Wyss AG, Münchenbuchsee, Switzerland

<sup>3</sup>Psychiatric Services Grisons, Chur, Switzerland

For nearly a century it has been hypothesized, that repetitive head trauma can lead to adverse neurological and psychiatric conditions [1]. Still, it took the discovery of Chronic Traumatic Encephalopathy (CTE) in a player of the National Football League to bring widespread public and scientific

attention to this important topic on the intersection of neurology, psychiatry and sports medicine [2,3]. Traumatic Brain Injuries are a significant medical and socioeconomic burden that reaches far beyond professional sports, leading to the disability of millions worldwide [4,5,6]. An understanding of the psychiatric aspects of head trauma therefore is necessary among physicians to assure optimal medical care for these patients.

The terminology of Traumatic Brain Injury is complicated and in part contradicting. However, it is important to define an unanimous nomenclature in order to facilitate scientific and medical discourse. The term “head trauma” is very broad and can refer to a wide range of injuries from a broken nose to a cerebral haemorrhage. Therefore, to specify brain damage in the context of trauma, the term “Traumatic Brain Injury (TBI)” is used. TBI can be graded in “mild”, “moderate” and “severe”, based on the Glasgow Coma Scale and the degree of post-concussive amnesia and loss of consciousness [7,8]. Mild Traumatic Brain Injury (mTBI) is with 90% by far the most prevalent TBI and one of the most abundant neurological disorders [9,10]. The term “concussion” is often used interchangeably with “mTBI”, especially in sports medicine. Yet the American Medical Society for Sports Medicine defines concussion as a “traumatically induced transient disturbance of brain function (...). Concussion is a subset of mild traumatic brain injury, (...) at the less severe end of the brain injury spectrum” [11].

mTBI patients may experience a variety of post-concussive symptoms, which can range from somatic symptoms (e.g. headache, dizziness, nausea), neurocognitive symptoms (e.g. disorientation), emotional symptoms (e.g. irritability, anxiety) up to sleep-disturbances [8,11,12]. According to some studies, these symptoms subside in 75-95% of patients within 2 weeks, while other research suggests, that a much larger percentage of patients exhibits persisting conditions [7,13,21]. “Post-Concussion Syndrome” is still widely used to describe lasting symptoms after TBI, but remains a problematic term due to multiple and partly conflicting definitions. Therefore, The American Medical Society for Sports Medicine proposes the term “Persistent Postconcussive Symptoms” (PPCS) to describe symptoms lasting for more than 2 weeks after TBI. PPCS should not be mistaken for CTE, which in contrast describes a chronic, neurodegenerative disorder that is associated with repetitive head trauma and is diagnosed neuropathologically. There is still a lot of controversy and discussion surrounding CTE. Incidence, specific causes and possible clinical manifestations of CTE are still lacking sufficient research [3,14,15,16,17].

Due to the broad range of possible neurological and psychological symptoms, psychiatric differential diagnosis of mTBI/PPCS can be challenging. Furthermore, pre-existing psychiatric conditions are a risk factor for more severe mTBI/PPCS symptoms [7,8]. A carefully taken patient history is therefore necessary to disentangle possible separate psychiatric diagnoses, such as depression, and treat them accordingly. Successful treatment of mTBI/PPCS often requires an interdisciplinary effort between sport physicians, neurologists, psychiatrists, physiotherapy and sometimes social workers. The first crucial step is an early side-line diagnosis right on the playing field in order to prevent further brain damage through continued sport participation. New guidelines advise – after a brief resting period of 24-48 hours – incremental increase in activity below the symptom-threshold [8,13]. The widespread practice of prescribing long-term rest might even lead to adverse outcomes [13]. In case of PPCS, psycho-education, psychotherapy and, if warranted, psychiatric medication can be also considered as a possible course of treatment. Some authors do suggest the use of antidepressants [18,19,20]. However, at present there is few, and even conflicting literature regarding the efficacy of medication and psychotherapy after mTBI [8]. Further possible treatment strategies can be improvement of sleep quality, physiotherapy, vision therapy and

social/administrative support if necessary. This highlights the importance of an individual assessment of the patients' needs and of coordination between healthcare professionals in order to achieve optimal treatment for TBI/PPCS.

## Corresponding author

Dr. med. Markus Deutschmann  
Department of Psychiatry,  
Psychotherapy and Psychosomatics  
University Hospital of Psychiatry Zurich,  
Zurich, Switzerland  
markus.deutschmann@pukzh.ch

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