

## PRACTICE



## 10-MINUTE CONSULTATION

## Managing recovery from concussion

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A 16 year old hit his head on the knee of another player during a sports match two days ago. He was taken to the emergency department, diagnosed with concussion, and discharged with head injury advice. His mother is concerned that he still has a headache and difficulty concentrating. He wants to return to playing sport as soon as possible.

Concussion is a clinical diagnosis made after a head injury with consequent associated signs, symptoms, and neurological or cognitive impairment<sup>1</sup> (infographic). These usually have a rapid onset and typically recover spontaneously within 7-10 days. Loss of consciousness occurs in <10% of incidents.<sup>2</sup> Collision and high impact sports,<sup>3</sup> such as rugby, hockey, soccer, motor sports, boxing, and horse riding, carry a higher risk. Most recommendations on the management and recovery from concussion are based on international expert consensus; in the absence of strong evidence.<sup>1</sup> Routine brain imaging is not advised.

### What you should cover

Ask how the injury was sustained. Was there significant head trauma or other clinical features suggestive of concussion? The most common symptoms of concussion are headache (87%), balance problems or dizziness (77%), feeling "in a fog" (62%), and difficulty concentrating (52%).<sup>4</sup>

The Sport Concussion Assessment Tool (SCAT-3)<sup>5</sup> or Child SCAT-3 (for ages 5-12 years),<sup>6</sup> is a battery of tests that can support a structured approach to assessment for concussion. There is consensus that it is the best and most comprehensive tool currently available, but its evidence base is incompletely characterised.

How does the patient feel in themselves? How do other people think they are? Have they rested their brain and body since the

injury? Has anything triggered a worsening or recurrence of symptoms (and thus should be avoided)?

Ask about previous injury; head, face, or cervical spine injuries, and any previously diagnosed or suspected concussions, particularly in the past 12 months. How long did it take before they returned to playing sports on previous occasions? Does the patient have a history of migraine or psychological difficulties that may prolong recovery or suggest a need for specialist neurological assessment?

Be vigilant to the possibility of alternative or related diagnoses (box 1) and offer a neurological and neck examination.

### What you should do

Explain what concussion is (box 2).

### Management of recovery

Suggest a period of mental and physical rest, followed by a period of relative rest with a gradual return to school or work. Restrict activities that provoke symptoms. If symptoms worsen with cognitive tasks consider a period of rest from school or work.

Suggest a graduated return to exercise or playing sport. Current UK Education sector guidance for children and young people recommends that this group be reviewed and assessed by a doctor once they are symptom free and successfully back at school before returning to sport and other activities with a predictable risk of head injury (see box 3). Guidance from UK sporting national governing bodies recommends that adults are reviewed and assessed in a similar way.

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Appendix 1: Infographic showing symptoms of concussion and suggested progression of recovery and return to sport

**What you need to know**

- Concussion is temporarily altered brain function after head trauma, and typically resolves over 7-10 days
- Thinking and remembering, mood, sleep, behaviour, and consciousness can be affected, and people commonly report headache and altered balance
- Suggest mental and physical rest followed by a graduated return to work or school, and finally to exercise and sport

**Box 1: Symptoms and signs of alternative diagnoses**

Intracranial haemorrhage—deteriorating consciousness, confusion, severe or increasing headache, repeated vomiting, seizures, and double or blurred vision

Cervical spine injury—weakness, tingling, or burning in limbs, midline or severe neck pain, increasing or persistent difficulty in walking, or poor balance

**Box 2: Explain concussion**

- Concussion is a traumatic brain injury following either a direct blow to the head or a force transmitted to the head without a direct hit.
- The brain releases chemicals that change how nerve cells work. This change can affect thinking and remembering, mood, sleep, behaviour, and level of consciousness.
- Offer patients written or online advice about the diagnosis, symptoms, and recovery.<sup>7</sup>
- 80-90% of people with concussion recover spontaneously<sup>1</sup> and fully, but some can experience serious consequences if their injury is poorly managed.
- Without good evidence to guide treatment, clinicians can use international consensus<sup>5</sup> and the UK Sport and Recreation Alliance<sup>8</sup> guidelines (infographic).

**Box 3: Assessment before returning to sport at any age<sup>1 8</sup>**

Confirm recovery before return to activities with a predictable risk of head injury. Assess that the individual is now symptom free at rest and after exercise compared with his / her usual self.

Ask questions from section 3 of the SCAT3 or Child SCAT3 (for ages 5-12 years).

Symptom checklist:

on scale of none (0), mild (1-2), moderate (3-4), or severe (5-6), rate current: pressure in head, neck pain, nausea or vomiting, dizziness, blurred vision, balance problems, sensitivity to light, sensitivity to noise, feeling slowed down, feeling "in a fog," "don't feel right," difficulty concentrating, difficulty remembering, fatigue or low energy, confusion, drowsiness, trouble falling asleep, more emotional, irritability, sadness, feeling nervous or anxious

Assess that the individual:

has successfully returned to their academic studies or work

has followed an appropriate gradual return to play

for U18s: there should be a minimum interval of 23 days from injury before return to sport that carries a predictable risk of head injury, unless their recovery is closely supervised by a doctor with expertise in concussion management.

If patients remain symptomatic consider whether the patient warrants referral (box 4)

Head trauma can trigger migraine and peripheral vestibular system dysfunction, leading to vertigo. These conditions can be safely diagnosed and managed in primary care.<sup>9 10</sup>

Caution in recovery and return to work and exercise is intended to minimise the risk of future complications such as chronic traumatic encephalopathy (long term neuropsychological, psychiatric, and behavioural disturbance leading to progressive cognitive decline), particularly for younger people.<sup>1</sup> Consider referral for specialist neurological assessment where there are concerning features (see box 4).

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**Box 4: Referral criteria for specialist neurological assessment and management**

- Concussion symptoms persisting beyond 10 days after injury
- Difficulties in returning to work or study
- In sports players, persistent failure to progress through a protocol for returning to sport (see infographic)
- Repeated concussions, especially if the causative trauma seems innocuous
- Children and young people sustaining  $\geq 2$  concussions in 12 months

**Patient involvement**

We thank an amateur social rugby player who recently sustained two concussions and sought treatment from his general practitioner read and commented on the paper, and said:

"I think it cannot be stressed enough how important it is to have complete rest during the first 48-72 hours. I stupidly watched some TV (having also gone back into work only 36 hours after it happened) but it was the high vis screen and any form of bright light that caused me problems."

The first author of this paper was a former professional rugby player who has been concussed: "When I was last concussed several years ago, concussion was often regarded as a less significant injury. There was limited medical input into the monitoring and management of my recovery. Over the last 5 years, the level of awareness amongst players, coaches, referees and medics has grown dramatically and concussion is taken very seriously and managed properly. It is also clear as a GP that GPs also need to be aware of how to safely assess the recovery of concussed individuals who are not professional athletes."