British Gymnastics – CONCUSSION GUIDELINES

A concussion care guideline has been developed, via a collaborative effort of the international gymnastics medical community, to help guide the medical care of athletes who have a suspected concussion.
The concussion care policy should serve as a standardized method of assessment to ensure accurate diagnosis and appropriate management for the injured gymnast following a sports concussion.

Purpose
This guideline covers the recognition, medical diagnosis, and management of gymnasts who sustain a suspected concussion during a sport activity. It aims to ensure that athletes with a suspected concussion receive timely and appropriate care and proper management to allow them to return to their sport safely. This guideline may not address every possible clinical scenario that can occur during sport-related activities but includes critical elements based on the latest evidence and current expert consensus.

Who should use this protocol?
This protocol is intended for use by all individuals who interact with gymnasts suspected of sustaining a concussion injury. It is appropriate for all individuals to be aware of proper protocols and management strategies. Individuals may include: the athlete, parents, coaches, officials, and licensed healthcare professionals.

1. Pre-Season Education

Despite recent increased attention focusing on concussion there is a continued need to improve concussion education and awareness. Optimizing the prevention and management of concussion depends highly on annual education of all sport stakeholders (athletes, parents, coaches, officials, and licensed healthcare professionals) on current evidence-informed approaches that can help identify and manage an athlete with a suspected concussion.

Concussion education should include information on:

- the definition of concussion
- possible mechanisms of injury
- common signs and symptoms
- steps that can be taken to prevent concussions and other injuries from occurring in sport
- what to do when an athlete has suffered a suspected concussion or more serious head injury
- what measures should be taken to ensure proper medical assessment

- *Return-to-School* and *Return-to-Sport Strategies*
- Return to sport medical clearance requirements

- **Who:** Athletes, parents, coaches, officials, and licensed healthcare professionals
- **How**: Pre-season Concussion Education Sheet, online education resources, face-to-face education

[All individuals should be encouraged to review the FIG Concussion Education Sheet, and familiarize themselves with all available FIG Concussion Education resources.]

2. Head Injury Recognition

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including athletes, parents, coaches, officials, and licensed healthcare professionals should be responsible for the recognition and reporting of an athlete who demonstrates visual signs of a head injury or who reports concussion-related symptoms.

A concussion should be suspected:

- in any athlete who sustains a significant impact to the head, face, neck, or body and demonstrates *ANY* of the visual signs of a suspected concussion or reports *ANY* symptoms of a suspected concussion as detailed in the *Concussion Recognition Tool (SCAT 5)* – see **Appendix 1**
- if an athlete reports ANY concussion symptoms to one of their peers, parents, or coaches, or if anyone witnesses an athlete exhibiting any of the visual signs of concussion – see **Appendix 1**

In some cases, an athlete may demonstrate signs or symptoms of a more severe head or spine injury including convulsions, worsening headaches, vomiting or neck pain. If an athlete demonstrates any of the 'Red Flags' indicated by the *Concussion Recognition Tool 5 (***Appendix 1**)*,* a more severe head or spine injury should be suspected, and Emergency Medical Assessment should be pursued.

If a possible concussion event has occurred and a licensed healthcare practitioner is NOT available, the athlete should be removed from practice or competition and referred immediately for medical assessment. The athlete must not return to play until receiving formal medical clearance.

- **Who:** Athletes, parents, coaches, officials, and licensed healthcare professionals
- **How**: Pre-season Concussion Education Sheet, online education resources, face-to-face education

3. Onsite Medical Assessment – Health Care Professionals

If there is a concern for a more severe head injury, or a cervical spine event, emergency medical services should be contacted. (**Appendix 1**)

In the event of a suspected concussion, the on-site licensed healthcare professional should complete a formal concussion assessment via available sideline medical assessment tools, such as the Sports Concussion Assessment Tool 5 (SCAT5). (**Appendix 2**)

Sideline Medical Assessment

If an athlete is suspected of sustaining a concussion and there is no concern for a more serious head or spine injury, **the player should be immediately removed from the field of play**, evaluated and monitored.

Scenario One *– Licensed healthcare professional is present:*

The athlete should be taken to a quiet area and undergo a sideline medical assessment using the Sport Concussion Assessment Tool 5 (SCAT 5) (**Appendix 2**) or the Child SCAT5 (used for ages 5-12) (**Appendix 3**). This policy also includes Maddocks Questions modified for gymnastics, which can be found in **Appendix 4**.

The SCAT 5 and Child SCAT 5 are clinical tools that should only be used by a licensed healthcare professional that has experience using them.

It is important to note that the results of SCAT5 and Child SCAT5 testing can be normal in the setting of acute concussion. As such, these tools can be used by licensed healthcare professionals to document initial neurological status but should not be used to make sideline return-to-sport decisions in athletes. Any athlete who is suspected of having sustained a concussion, or has been diagnosed with a concussion, must NOT return to the practice or competition and must be referred for further medical assessment by a licensed healthcare professional. Until further assessment is obtained, the athlete should be monitored for new or worsening symptoms and/or signs of concussion.

If an athlete has been removed from play following a significant impact and has undergone a formal concussion assessment by a licensed healthcare professional trained in concussion care, there are NO visual signs of a concussion, the athlete reports NO concussion symptoms, and the healthcare professional determines that a concussion has not occurred, then the athlete can be returned to play but should be monitored for delayed symptoms. If the athlete develops delayed symptoms, the athlete should be removed from play and undergo further medical assessment.

- **Who**: Licensed healthcare professionals – Athletic therapist/trainer, physiotherapist, medical doctor
- **How**: Sport Concussion Assessment Tool 5 (SCAT5*),* Child Sport Concussion Assessment Tool 5 (Child SCAT5)

4. Medical Assessment

To provide comprehensive evaluation of athletes with a suspected concussion, the medical assessment must rule out more serious forms of traumatic brain and spine injuries, must rule out medical and neurological conditions that can present with concussion-like symptoms, and must make the diagnosis of concussion based on findings of the clinical history and physical examination and the evidence-based use of adjunctive tests as indicated. Appropriate healthcare professionals will vary per country, but the practitioner should be specifically trained in the care of a sports concussion. Athletes should not return to gymnastics unless a formal assessment has been completed and formal medical clearance obtained.

- **Who**: Healthcare professionals trained in sports concussion
- **How:** *Medical Assessment Letter*

5. Concussion Management

When an athlete has been diagnosed with a concussion, it is important that all stakeholders are informed, including the athlete's parent/legal guardian, coach, and healthcare team. It is also important for the athlete to provide this information to sport organization officials that are responsible for injury reporting and concussion surveillance where applicable.

Athletes diagnosed with a concussion should be provided with education about the signs and symptoms of concussion, strategies about how to manage their symptoms, the risks of returning to sport without medical clearance and recommendations regarding a gradual return to school and sport activities. Athletes diagnosed with a concussion should be managed according to international consensus guidelines, which are included in this FIG Concussion Guideline. It is also recommended that individual international federations adopt concussion policies in line with international consensus and this FIG protocol. A progressive recovery process should include:

1. Initial physical and cognitive rest to facilitate symptom resolution
2. Periodic medical assessment to:
    a. Evaluate recovery process
    b. Screen for additional symptom generators
    c. Referral to additional medical specialties for multidisciplinary approach when applicable
    d. Guidance on return to academic and sport activities
3. Initiation and completion of a sport-specific return-to-gymnastics strategy, under the supervision of a medical practitioner. (See below for details regarding the *Gymnastics-Specific Return-to-Sport Guideline*)

Once the athlete has completed the *Gymnastics-Specific Return-to-Sport Guideline* and are deemed to be clinically recovered from their concussion, an appropriate medical practitioner can reassess the athlete for clearance back to full participation.

The stepwise progression included in the *Gymnastics-Specific Return-to-Sport Guideline* is outlined below.

- **Who**: Healthcare professionals trained in sports concussion
- **How:** FIG or federation-based concussion management policy

6. Gymnastics-Specific Return-to-Sport Strategy

The following is an outline of the return-to-sport strategy that should be used to help athletes, coaches, trainers, and medical professionals facilitate a safe and gradual return to sport activities. Initial symptom resolution is the priority and a return-to-sport strategy should not be pursued until this has been achieved. To be considered "symptom free", the athlete must be clear of any initial concussion-related symptoms, lack any new onset symptoms, and have successfully returned to school, work, or other cognitive activities without symptoms and with baseline performance. The athlete should be symptom free for 24-48 hours before starting the *Gymnastics-Specific Return-to-Sport Strategy.* The athlete should take a minimum of 24 hours (in gymnasts 18 years old and younger, you should consider a longer period of time) to complete each step in the progression. If the athlete experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage that they completed symptom-free, wait for symptoms to resolve, and then begin the progression again.

It is important to note, that symptom resolution can take an average of 7-10 days for adults, and 2-4 weeks for children. Appropriate expectations and time are essential for a safe return to sport.

In a setting that does NOT include close medical team oversight, a defined period of rest can be considered prior to starting the following:

- Return-to-sport strategy: a minimum of 7 days for adults, and 14 days for children
- Clearance back to full sport participation: a minimum of 14 days for adults, and 28 days for children

Below is the *Gymnastics-Specific Return-to-Sport Strategy* table, which gives a basic outline for return to gymnastics following a concussion event. A more detailed and discipline-specific protocol can be developed by appropriate medical professionals, with familiarity of elite gymnastics, in collaboration with gymnastics coaching staff.

- **Who**: Healthcare professionals trained in sports concussion
- **How:** *Gymnastics-Specific Return-to-Sport Strategy*

SPORTS CONCUSSION

Gymnastics-Specific Return-to-Sport Strategy

[Per protocol – Return-to-Sport strategy starts after at least 48 hours of symptom-free rest]

[24 hours should separate each step within this Return-to-Sport strategy]

STAGE	AIM	ACTIVITY	GOAL OF EACH STEP
1	Rest followed by light aerobic activity	Daily activities that do not provoke symptoms for 48 hours, then light aerobic activity that doesn't worsen symptoms • Stationary bike • Light jogging • Stretching (no inverted positions)	• Gradual reintroduction of work/school activities
2	Return to early sport specific training: *Inversion*	• Moderate intensity aerobics • Moderate intensity sprinting • Leaps, jumps on flat and low heights • Landing drills – floor based, low impact • Gymnastics strengthening – start slow and then progress • Static and dynamic stretching • Start basic, non-dynamic inversion (ie. Handstands) • Discipline-specific progression: ○ Ar – FX/B/PH/PB – basic swings, leaps, jumps, dance ○ R – basic dance, no rotation ○ TT – non-impact, land-based drills ○ Ac/G – limited lifts, choreography ○ P - running, jump drills without obstacles	• Increase heart rate • Start non-dynamic basic skills • Limited inversion • No twisting or flipping
3	Progress sport specific training: *Flipping*	• As above with increased intensity • Discipline-specific progression: ○ Ar – add basics UB/R/HB, start V drills ○ R – advance dance/rotation/basic throws (Indv/Non-Group) ○ TT – single flipping skills, basic tumbling, timing drills ○ Ac/G – basic tumbling, basic balance/lift drills ○ P - low height hurdles/climbs, flipping drills	• Add full inversion • Advance to basics and limited flipping • No twisting
4	Progress sport specific training: *Twisting*	• As above with increased complexity • Discipline-specific progression: ○ Ar – skill progression all events, add twisting/complex flipping ○ R – add full throws/rotation/sequences (Indv/Non-Group) ○ TT – add complex flipping, single twisting ○ Ac/G – advance balance/lift skills/tumbling ○ P - high height hurdles/climbs, flip/twist without obstacles	• Add complex flipping • Start basic twisting
5	Progress sport specific training: *Advanced Skills*	• As above with increased complexity • Discipline-specific progression: ○ Ar – complex skills, higher risk skills (i.e. release skills) ○ R – continue full skills/sequences, integrate with Group ○ TT – complex flip/twist skills, basic sequences ○ Ac/G – add full tumbling/lift/balance skills – FULL CLEARANCE ○ P – add flip/twist with obstacles	• Combine complex inversion and rotation • Improve endurance & strength

6	Return to full training	• Focus on slow increase in volume, to build stamina & strength • Ar/TT/P – FULL CLEARANCE • Progress through the following steps: 1. Single skill elements 2. Combined elements/Sequences 3. Routine parts 4. Full routines	• Final full reintegration

Ar = Artistic; R = Rhythmic; TT = Tumbling & Trampoline; Ac/G = Acro/Group; P = Parkour
FX = Floor Exercise; B = Beam; PH = Pommel Horse; PB = Parallel Bars; UB = Uneven Bars; R = Rings; HB = High Bar
Indv = Individual

6. Multidisciplinary Concussion Care

Most athletes who sustain a concussion while participating in sport will make a complete recovery and be able to return to full school and sport activities within 1-4 weeks of injury. However, some individuals will experience symptoms that persist beyond this time frame. If available, individuals who experience persistent post-concussion symptoms (>4 weeks for youth athletes, >2 weeks for adult athletes) may benefit from a supervised multidisciplinary approach that may include medical doctor experts in sport concussion, neuropsychology, physiotherapy, occupational therapy, neurology, chiropractic medicine, osteopathic medicine, neurosurgery, and rehabilitation medicine.

Referral to other multidisciplinary practitioners for assessment should be made on an individualized basis at the discretion of an athlete's medical team. Depending on the clinical presentation of the individual, this treatment plan may involve a variety of health care professionals with areas of expertise that address the specific needs of the athlete.

7. Return to Sport

Athletes who have been determined to have not sustained a concussion and those that have been diagnosed with a concussion and have successfully completed their *Gymnastics-Specific Return-to-Sport Strategy* can be considered for return to full sports activities. The final decision to medically clear an athlete to return to full sport activity should be based on the clinical judgment of the medical team.

The following criteria must be met prior to return to gymnastics after a concussion event:

1. Gymnast is consistently symptom free
2. Successful reintegration of symptom-free activities of daily living, as well as academic and/or work activities

3. Successful completion of the *Gymnastics-Specific Return-to-Sport Strategy*
4. A final evaluation by the medical team is completed and the athlete is cleared to return to full gymnastics activities

Following return to full activities, if the athlete experiences any new concussion-like symptom, they should be instructed to stop gymnastics immediately and undergo reassessment with their medical team.

CONCUSSION RECOGNITION TOOL 5 ©

To help identify concussion in children, adolescents and adults

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RECOGNISE & REMOVE

Head impacts can be associated with serious and potentially fatal brain injuries. The Concussion Recognition Tool 5 (CRT5) is to be used for the identification of suspected concussion. It is not designed to diagnose concussion.

STEP 1: RED FLAGS — CALL AN AMBULANCE

If there is concern after an injury including whether ANY of the following signs are observed or complaints are reported then the player should be safely and immediately removed from play/game/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

- **Neck pain or tenderness**
- **Double vision**
- **Weakness or tingling/ burning in arms or legs**
- **Severe or increasing headache**
- **Seizure or convulsion**
- **Loss of consciousness**
- **Deteriorating conscious state**
- **Vomiting**
- **Increasingly restless, agitated or combative**

Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Assessment for a spinal cord injury is critical.
- Do not attempt to move the player (other than required for airway support) unless trained to so do.
- Do not remove a helmet or any other equipment unless trained to do so safely.

If there are no Red Flags, identification of possible concussion should proceed to the following steps:

STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

- Lying motionless on the playing surface
- Slow to get up after a direct or indirect hit to the head
- Disorientation or confusion, or an inability to respond appropriately to questions
- Blank or vacant look
- Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
- Facial injury after head trauma

STEP 3: SYMPTOMS

- Headache
- "Pressure in head"
- Balance problems
- Nausea or vomiting
- Drowsiness
- Dizziness
- Blurred vision
- Sensitivity to light
- Sensitivity to noise
- Fatigue or low energy
- "Don't feel right"
- More emotional
- More Irritable
- Sadness
- Nervous or anxious
- Neck Pain
- Difficulty concentrating
- Difficulty remembering
- Feeling slowed down
- Feeling like "in a fog"

STEP 4: MEMORY ASSESSMENT

(IN ATHLETES OLDER THAN 12 YEARS)

Failure to answer any of these questions (modified appropriately for each sport) correctly may suggest a concussion:

- "What venue are we at today?"
- "Which half is it now?"
- "Who scored last in this game?"
- "What team did you play last week/game?"
- "Did your team win the last game?"

Athletes with suspected concussion should:

- Not be left alone initially (at least for the first 1-2 hours).
- Not drink alcohol.
- Not use recreational/ prescription drugs.
- Not be sent home by themselves. They need to be with a responsible adult.
- Not drive a motor vehicle until cleared to do so by a healthcare professional.

ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PRACTICE OR PLAY AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE

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Appendix 2 – Sports Concussion Assessment Tool 5 (SCAT5)
https://bjsm.bmj.com/content/bjsports/51/11/851.full.pdf

Appendix 3 – Child – Sports Concussion Assessment Tool 5 (Child-SCAT5)
https://bjsm.bmj.com/content/bjsports/early/2017/04/26/bjsports-2017-097492childscat5.full.pdf

Appendix 4 – Maddocks Questions for Gymnastics

Maddocks questions are used in many sports as part of the on-field assessment for concussion. These questions have generally been utilised in team sports.
Below we propose the following as an appropriate set of Maddocks Questions for Gymnastics:

- What venue are we at today?
- What skill were you attempting?
- What was your last apparatus?
- Who was on the apparatus/floor before you?
- How many pieces/events do you have left?