



## Concussion Guideline International Korfball Federation (IKF) May 2023

*This advice has been written by the medical committee of the International Korfball Federation based on documents available in the literature and from other sport associations as a advice towards players, staff, referees, volunteers and IKF employees.*

### Concussion facts

- All concussions are serious
- Concussions can occur without loss of consciousness
- All athletes with symptoms following a head injury
  - must be removed from play or training
  - should not return to play or exercise until they are symptom-free or all concussion-related symptoms have resolved or returned to pre-concussion levels
  - must fully follow the Return to Play protocol
  - must be assessed by a specialist
- It is forbidden to return to competition or training on the day of a concussion
- Recognize and remove to prevent further serious and permanent injury
- A concussion can be fatal
  - do not resume playing if symptoms persist
- Most players with a concussion recover with physical and mental rest

### 1. Purpose of the protocol

This protocol has been written by the medical committee of the IKF to allow an advisory policy to be used by the medical staff of all countries, and to create clarity for trainers and players about the treatment and Return to Play after a concussion. The content of this protocol has been written based on best available evidence and advice from the Royal Dutch Football Association (KNVB) and the Federation Internationale de Football Association (FIFA). This protocol covers adults and youth over 10 years old.

## **2. What is a Concussion?**

The definition of a concussion according to the 3rd International Congress of Concussion in Sports 2008: A complex pathophysiological process affecting the brain induced by traumatic biomechanical forces.

FIFA uses another definition: a concussion is the temporary loss of normal brain function as a result of trauma. A player does not have to have experienced a loss of consciousness to have a concussion. For example, a player may be confused and/or have a loss of sense of time for some time after the trauma. Other typical symptoms may include headache, dizziness, nausea and imbalance.

Loss of consciousness is not a requirement for a concussion diagnosis but is a clear indication that a concussion has been suffered. A standard brain scan will look normal in someone with a concussion and so a normal brain scan is not a reliable test to determine whether a player has a concussion.

A concussion is a mild traumatic brain injury. In most cases there is no permanent damage, but the complaints can last for weeks to months.

A brain contusion is a moderate to severe brain injury. With a brain contusion there is a chance that the damage will remain. The risk of residual complaints is greater than with a concussion.

### 3. Signs and Symptoms of an Acute Concussion

#### 3.1 Domains

When diagnosing an acute concussion, the following areas should be included in the investigation:

- Clinical symptoms: headache, unconsciousness, emotional lability
- Mental symptoms: amnesia
- Behavioral changes: irritable, for example
- Balance: balance disorder
- Sleep: for example, drowsiness, difficulty falling asleep
- Cognition: e.g., delayed reaction time, feeling absent, disorientation in time

If any of these symptoms are present, a possible concussion should be suspected, and further investigation is needed.

- Clear indicators of (suspected) concussion.  
One or more of the following signs clearly indicate a concussion:
  - o Attack (seizures)
  - o Loss of consciousness - confirmed or suspected
  - o Unsteady on the feet or balance problems or falling over or poor coordination
  - o Confused
  - o Disoriented - unaware of where they are, who they are or the time of day
  - o Dazed, blank, or blank stare
  - o Behavioral changes, for example more emotional or more irritable
- Other signs of (suspected) concussion
  - o Injuries that could potentially cause a concussion
  - o Grabbing or gripping the head
  - o Slow to get up off the floor
  - o Lie motionless on the floor
- Symptoms of (suspected) concussion  
The development of one or more of the following signs and symptoms may indicate a concussion:
  - o Headache
  - o Dizziness
  - o Disturbance of balance
  - o Confusion/ Difficulty concentrating
  - o Delayed feeling
  - o Blurred vision
  - o Nausea or vomiting
  - o Drowsiness/feeling "in a fog"
  - o Reinforced emotional behavior (irritation or anger)
  - o "Busy in the head"
  - o Sensitivity to light or sound
  - o Not feeling well

### **3.2 Field and lateral line evaluation of acute concussion**

In case of head trauma/injury, the player should first be evaluated according to Sports Accident First Aid (EHBSO) standards, with special attention to rule out cervical injuries. If neck injury is suspected, appropriate emergency procedures should be followed, and the neck stabilized. In this case, the player should only be removed by emergency responders with expertise in neck and back stabilization. When a player is suspected of having a concussion, the pocket SCAT-5 (Appendix 1) developed by FIFA must be used before a decision is made whether a player can return to the field. Partly based on the test results of one of these cards, it is decided whether it is responsible to allow the player to continue exercising.

Medical supervision, coaches, players who suspect that a player has a concussion should do their best to ensure that the player is removed from the field of play in a safe manner. For youth, it is advised to remove the player from the field and not to let them play football that day. Symptoms may not be immediately apparent but may appear later in the day or the next day. When in doubt, never let play/train continue.

### **3.3. Evaluation in the medical room or changing room by medical personnel**

If it is chosen not to allow the player to continue playing, he must be removed from the field and examined by SCAT-5. The player must not be left alone. It is also reviewed here whether an examination by a doctor is deemed necessary.

The SCAT-5 is a standardized tool for evaluating injured athletes with a concussion. (<https://bjsm.bmj.com/content/bjsports/early/2017/04/26/bjsports-2017-097506SCAT5.full.pdf>) The SCAT-5 can be used by athletes from the age of 10. However, no cut-off point of the SCAT-5 is currently available and therefore the SCAT-5 cannot be used as a diagnostic tool. Telstar Women uses the SCAT-5 as an evaluative tool to measure and register deterioration or improvement. For this reason, Telstar has decided to determine a zero measurement (baseline) in the preparations for the season by taking the SCAT-5 for the entire group. This may be of value in interpreting post-trauma test results. However, factors such as the learning effect of the player must be considered. To make these kinds of values more reliable, a computerized test has been developed. However, this is not available to us.

Players with a concussion or suspected concussion:

- Must not be left alone for the first 24 hours.
- Must not consume alcohol for the first 24 hours and then must avoid alcohol until medical or health professional clearance is given. If no medical or health expert advice is available, the injured player must avoid alcohol until he no longer shows any symptoms.
- Must not drive or drive a motor vehicle again until cleared by a medical or health professional. If no medical or health expert advice is available, the player should not drive until the symptoms have resolved.

#### **4. Return-to-play plan**

In adult athletes where the circumstances are such that proper testing can be done immediately by physicians, RTP management could be faster. The RTP strategy should still follow the same basic principles. Mainly complete clinical and cognitive recovery before considering RTP. Research shows that this accelerated protocol is not recommended in people <18 years old.

Physical rest must last at least one week for any adult player with a concussion or suspected concussion. This physical rest includes 24 hours of complete physical and cognitive rest, followed by relative rest (activity that does not provoke or exacerbate symptoms) for the remainder of the week. Cautious cognitive ("thinking") activities are allowed after the mandatory 24 hours of complete (physical and cognitive) rest period, as long as the concussion symptoms do not worsen.

Children and adolescents should be treated more conservatively than adults. Any child or young adult with a concussion or suspected concussion should have at least two weeks of physical rest. If there are no more symptoms, the Return to Play program can be followed after a minimum of two weeks of physical rest.

According to this step-by-step process, the player is allowed to move to the next phase when no symptoms are present in the current phase for 24 hours. It takes about a week to go through the entire RTP protocol. If post-concussion symptoms occur during the protocol, the patient should return to the previous asymptomatic phase. It is desirable to be cautious with medication during these 2 weeks because this can cloud the recovery and lead to false positive feedback.

#### **Return to Play protocol**

##### **Phase 0**

- Introduction of daily activities
- Walking
- Avoids complete rest when it is not necessary

##### **Phase 1-2**

- Increase heart rate
- Cycling/jogging
- In an environment with minimal stimuli (so no cycling through the city)
- Slowly build up in duration
- Point of attention: disguise of complaints: "Doctor, I feel good"

##### **Phase 3**

- Add movement, multi-directional
- Increase in shock load
- Running and exercises with a ball (individual)
- 30-45 minutes
- Interval training

#### Phase 4

- Exercises without contact
- Warm up
- Position game without contact
- Build up strength training

#### Phase 5

- Full contact training
- -SCAT 5
- Assessment of skills by the staff
- Checking complaints after a training
- Stage 6
- Expand training
- Then return RTP (slowly build up minutes)
- Checking complaints after training and competition

Any child, young adult, or adult player with a second concussion within 12 months, or with a history of multiple concussions, or an unusual presentation or a prolonged recovery, should be comprehensively assessed and treated. No further participation in sports may take place until the player has been cleared by a specialist experienced in sports-related concussions.

## **5. Advice for players with a concussion or contusion in Phase 0**

Take it easy for the first few days and then slowly resume your activities. During these first weeks, many people experience complaints that vary from headaches to concentration problems and / or overstimulation.

Build up your activities slowly. The latest insight is that alternation of strenuous activities and relaxation helps you to heal.

Make sure you get enough and good sleep, limit sleeping during the day.

Provide short, varied activities. When you feel it's getting too much for you, go do something else that relaxes you for a while.

Look less at your screen (telephone, television, computer or tablet) during the first days or weeks if you feel that this is bothering you.

Avoid another blow to the head: do not practice contact sports.

Take the time and rest to get better, avoid overexerting yourself. Take your complaints seriously, don't go beyond your limits.

## **6. Creating awareness of the negative effects on health**

The timely and adequate recognition of a concussion can be difficult. The risks of continuing to play with a concussion are not equally clear to everyone. To create more awareness among players and coaches, it is recommended to draw attention to this. Video material can help to underline the importance. Here are 2 examples that can be used for this: 1 from FIFPro (interest organization for professional football players) and 1 from UEFA.  
Peter Cech awareness video <https://www.youtube.com/watch?v=pCFudAtIs1I>  
Video Uefa <https://www.facebook.com/uefa/videos/concussion-awareness/413661856002647/>



# Appendix 1 – Concussion recognition Tool SCAT 5 FIFA

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**CONCUSSION RECOGNITION TOOL 5**  
 To help identify concussion in children, adolescents and adults

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

**RECOGNISE & REMOVE**

**STEP 1: RED FLAGS – CALL AN AMBULANCE**

If there is concern after an injury, including whether ANY of the following signs are present, the athlete should be removed from participation/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

- Neck pain or tenderness
- Double vision
- Loss of consciousness
- Increasingly repetitive vomiting
- Increasingly repetitive signs of convulsion
- Increasingly repetitive signs of irritability

**Remember:**

- If all signs, the child/athlete should be referred to hospital for further assessment for a spinal cord injury as critical.
- Do not attempt to remove the athlete from the field of play unless trained to do so.
- Support/protect contact to be done, if necessary, by a trained person.
- Do not give 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:

- Unusual head-on or eye-to-eye contact
- Unusual head-on or eye-to-eye contact
- Spine to put up after a direct or indirect hit to the head
- Confusion on inability to respond appropriately to questions
- Blank or vacant look
- Balance, gait difficulties, stumbling, slow laboured movements
- Facial injury after head trauma

**STEP 3: SYMPTOMS**

- Headache
- "Pressure in head"
- Balance problems
- Nausea or vomiting
- Dizziness
- Blurred vision
- Sensitivity to light
- Sensitivity to noise
- Fatigue or low energy
- "Don't feel right"
- More emotional
- More irritable
- Sadness 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 the following questions 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's 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.

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**ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PLAY/ACTIVITY OR BE KEPT IN A SAFE PLACE AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE**

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