Concussion Management

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Webinar Outline

- Define Concussion
- Review of Cycling Canada's Concussion Protocol
- On field management
- Clinical management
- Questions

Concussion Definition

- A concussion is an injury that happens when the BRAIN hits the side of the skull.
- This may be caused by a direct blow to the head, face or neck with an “impulsive force” transmitted to the head. (ie. a sudden stop or twist, or if someone hits/contacts the athlete).
- The injury can cause brain swelling or other complications.
- Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury. (Because the injury is internal, we have to rely on mental, physical and emotional symptoms to diagnose and monitor)

Concussion Definition

- Concussion results in a graded set of clinical symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course.
- Most concussions resolve in 7-10 days with the exception of children and adolescents
- In a small percentage of cases, post-concussive symptoms may be prolonged.
- No abnormality on standard structural neuro-imaging studies is seen in concussion. (X-ray, MRI, CT scan are all normal)

Chris Horner Crash 2011 Tour De France

http://www.bicycling.com/video/chris-horner-post-stage-7-crash

Cycling Canada Concussion Protocol

CC CONCUSSION MANAGEMENT

GUIDELINES FOR RECREATIONAL, AMATEUR, & ELITE ATHLETES OF ALL AGES

- You DO NOT have to lose consciousness to have a concussion. Symptoms are often subtle and a loss of consciousness occurs in a small percentage of concussed athletes.
- NEVER return to cycling while symptomatic- follow the step progression for return to cycling on the back of this card.
- A concussion can be caused by a direct blow to the head, face or neck OR from a blow elsewhere on the body that creates an "impulse" force in the head.
- Helmets should be worn at all times when on the bike as a catastrophic crash isn't necessary to cause a head injury, a simple bump on the head can be traumatic to the brain.

WHAT IS A CONCUSSION?

A concussion is an injury to the brain that happens when the brain hits the skull. This can happen when you hit your head, when you stop or twist suddenly, or if someone hits you. The injury can cause brain swelling and other complications, and because the injury is internal we have to rely on mental, physical, and emotional symptoms to diagnose it.

SIGNS & SYMPTOMS OF A CONCUSSION

ANY ONE of the following can indicate concussion:

- Dizziness
- Headache
- Confusion
- Nausea
- Loss of Balance
- Double Vision or seeing stars
- Ringing in the Ears
- Slurred Speech
- Sensitivity to light or sound
- Emotional or Personality Changes
- Feeling "stunned", or dazed
- Loss of consciousness
- Poor concentration
- Decreased skill execution & slow reaction times

CyclingCANADACyclisme

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Photo credit: Layne Ryhorug

MANAGEMENT & REHABILITATION

No riding on the day of injury if a concussion is suspected (even if symptoms have resolved)
An Athlete Should Never Return To Riding While Symptomatic
WHEN IN DOUBT, SIT THEM OUT!

WHAT TO DO

- the athlete should be medically examined by onsite trained medical professional
- if not available, medical attention should be sought
- monitor the athlete's symptoms, using the SCAT tool if possible
- if any deterioration of symptoms occur, seek medical attention

WHAT NOT TO DO

- consume alcohol within 24 hours of injury
- wake the athlete up every two hours unless advised to do so by medical professional
- leave the athlete unattended for the first 1-2 hours after the incident occurs
- attempt to get back on the bike unless cleared by a medical professional
- give the athlete any prescription medication (sedative or narcotic), that may mask the symptoms of a concussion, check with medical professional for over the counter meds.
- let the athlete drive

WHEN TO RETURN TO RIDING

Medical Recommendations for Step Procedure:

- the athlete must remain asymptomatic throughout the steps- if they experience symptoms, they must back up one step
- the athlete should be symptom free for 24 hours before progressing to the next step
- it is advised that the athlete be monitored through this process (coach, medical professional)

STEP 1
Rest until asymptomatic (physical and mental rest)
This includes limiting physical exertion as much as possible, including normal daily activities. The athlete should not have to do any focussing, concentration (including computer or video games) or incur any stress at all. If you have to strain or exert to do anything, it should not be done.

STEP 2
Light aerobic exercise such as trainer, rollers or stationary bike
NO resistance training

STEP 3
Sport specific training (Low Intensity)
Road - flat, non paceline, low stress
Track - non-group ride on track or road ride
MTB - road ride, no technical
BMX - low intensity, road ride, no technical

STEP 4
Training Drills and Resistance Training (Increased Intensity)
Road - climbs, internals
Track - group riding on track, internals, starts
MTB- training drills- low/moderate technical skills, internal
BMX - training drills- low/moderate technical skills, internal, starts

STEP 5
Regular Training and skill execution
Road - motorpacing or group riding
Track - motorpacing
MTB - course pre-riding, technical riding
BMX- course pre-riding, technical riding

STEP 6
Race Ready

SIGNS & SYMPTOMS

- Dizziness
- Headache
- Confusion
- Nausea or vomiting
- Loss of balance
- Double vision or seeing stars
- Ringing in the ears
- Slurred speech
- Sensitivity to light or sound
- Emotional or personality changes
- Feeling “stunned” or dazed
- Loss of consciousness or decreased consciousness
- Poor concentration
- Decreased skill execution & slow reaction times
- Difficulty remembering

What to do?

- Athlete should be examined by the venue medical
- Sit the athlete out if they have any of the symptoms
- Monitor the athlete’s symptoms throughout the day (using SCAT 3)
- Check with a medical professional before giving the athlete any over the counter medication
- Seek medical attention if the symptoms deteriorate

What **NOT** to do

- This is more important than the “what to do” list!
- DO NOT allow the athlete to compete/train if he/she has experienced any of the symptoms from the list
- DO NOT let the athlete consume alcohol within 24 hours of injury
- DO NOT leave the athlete for the first 1-2 hours after experiencing symptoms
- DO NOT wake the athlete up from their sleep unless directed to do so by a medical professional
- DO NOT let the athlete drive
- DO NOT give the athlete any prescription medication (sedative or narcotic) as it could mask symptoms

Return to Riding
STEP PROCEDURE

- NOTES: Athlete must be able to complete the step SYMPTOM FREE and remain symptom free for 24 hours before moving on to the next step
- the athlete should be monitored through these steps (coach, medical professional)
- if symptoms re-occur, return to previous asymptomatic step level and try to progress again in 24 hours
- An athlete should NEVER to try to return to racing if still symptomatic

Return to Riding
STEP PROCEDURE

- STEP 1
- Rest until asymptomatic (physical and mental rest)
- limiting physical exertion as much as possible
- no focusing, video games, computer/phone
- absolutely no stress, strain or exertion for anything

Return to Riding
STEP PROCEDURE

- STEP 2
- Light anaerobic exercise such as trainer, rollers or stationary bike
- NO resistance training

Return to Riding
STEP PROCEDURE

- STEP 3
- Sport Specific Training- Low Intensity
- ROAD-flat, non-paceline, low stress
- TRACK- non-group ride on track or road
- MTB- road ride, no technical riding
- BMX- low intensity, road ride, no technical track riding

Return to Riding
STEP PROCEDURE

- STEP 4
- Training Drills and Resistance Training (Increased Intensity)
- Road- climbs, intervals
- Track- group riding on track, intervals, starts
- MTB- training drills, low/moderate technical skills, interval training
- BMX- training drills- low/moderate technical skills, intervals, or sprints, starts

Return to Riding
STEP PROCEDURE

- STEP 5
- Regular Training and Skill Execution
- Road- motorpacing or group riding
- Track- motorpacing
- MTB-course pre-riding, technical riding
- BMX- course pre-riding, technical riding

Return to Riding
STEP PROCEDURE

- STEP 6
- RACE READY

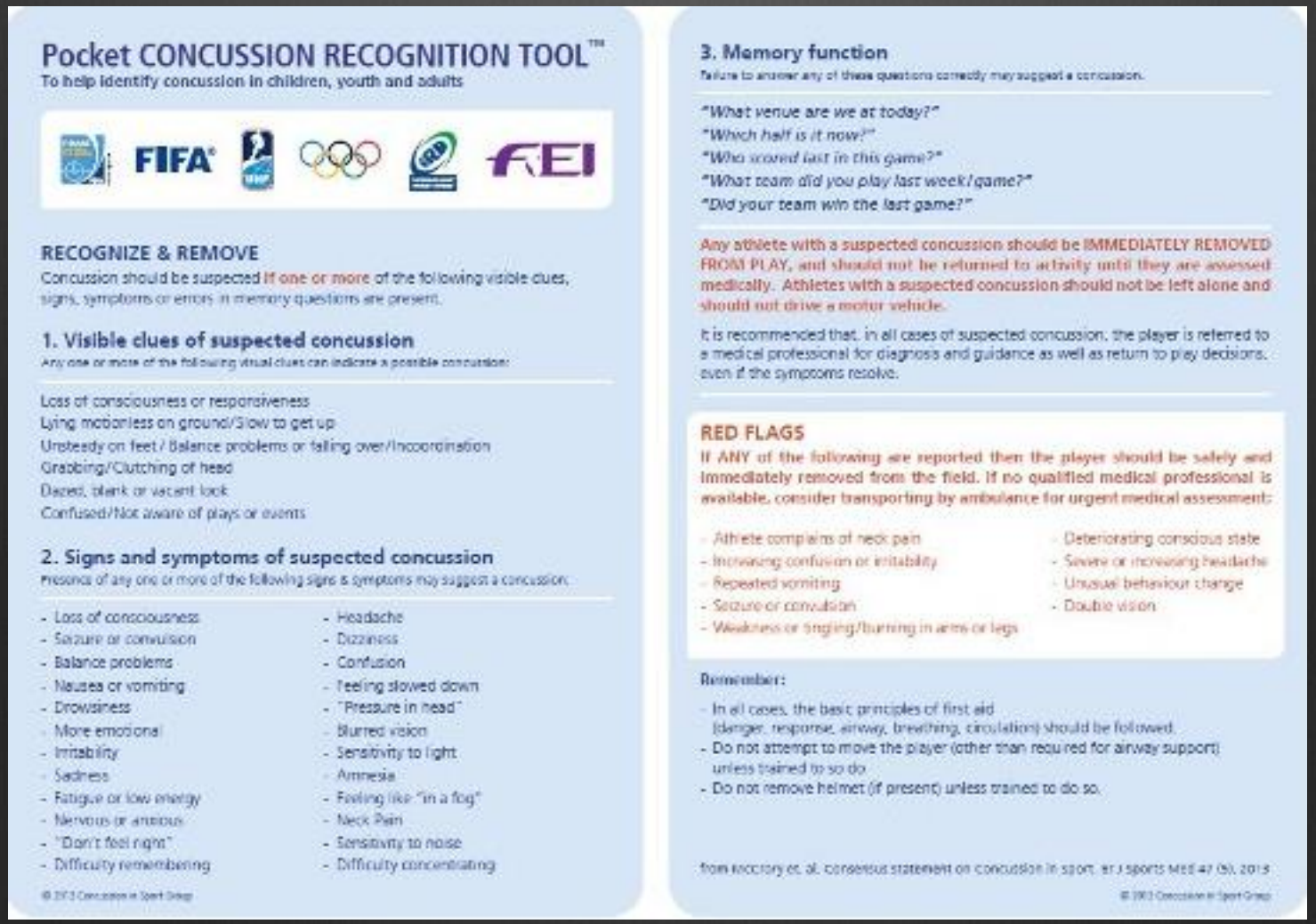
What to do on in the field?

- If a head therapist is not present, take the athlete to venue medical
- If no venue medical available, take the athlete to the hospital if vomiting, or if symptoms get worse as the day progresses, or if any concerns
- Sit them out!
- Documentation (SCAT3, CAMP)
- Evaluation by their family doctor/physician as soon as possible

SCAT 3

- Evaluation tool
- Easy to use
- Can also be used as a baseline
- Other baseline testing tools on the market as well (ie- Impact)

SCAT 3 and CRT



Pocket CONCUSSION RECOGNITION TOOL™

To help identify concussion in children, youth and adults

FIFA

RECOGNIZE & REMOVE

Concussion should be suspected if one or more of the following visible clues, signs, symptoms or errors in memory questions are present.

1. Visible clues of suspected concussion

Any one or more of the following visual clues can indicate a possible concussion:

Loss of consciousness or responsiveness
Lying motionless on ground/Slow to get up
Unsteady on feet / Balance problems or falling over/Incoordination
Grabbing/Clutching of head
Dazed, blank or vacant look
Confused/Not aware of plays or events

2. Signs and symptoms of suspected concussion

Presence of any one or more of the following signs & symptoms may suggest a concussion:

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

3. Memory function

Failure to answer any of these questions 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?"

Any athlete with a suspected concussion should be IMMEDIATELY REMOVED FROM PLAY, and should not be returned to activity until they are assessed medically. Athletes with a suspected concussion should not be left alone and should not drive a motor vehicle.

It is recommended that, in all cases of suspected concussion, the player is referred to a medical professional for diagnosis and guidance as well as return to play decisions, even if the symptoms resolve.

RED FLAGS

If ANY of the following are reported then the player should be safely and immediately removed from the field. If no qualified medical professional is available, consider transporting by ambulance for urgent medical assessment:

- Athlete complains of neck pain
- Increasing confusion or irritability
- Repeated vomiting
- Seizure or convulsion
- Weakness or tingling/burning in arms or legs
- Deteriorating conscious state
- Severe or increasing headache
- Unusual behaviour change
- Double vision

Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Do not attempt to move the player (other than required for airway support) unless trained to so do
- Do not remove helmet (if present) unless trained to do so.

from Aubry et. al. consensus statement on concussion in sport. Br J sports Med 47 (5), 2013

Clinical Management

- Several systems within the body may have been compromised during a concussion related injury
- It is important that all of these systems are properly assessed and treated
- Muscular-Skeletal system, vestibular system, Ocular-motor system, cognitive/emotional system

Muscular-Skeletal System Treatment

- Injury to the soft tissues of the neck/spine (muscles, joints, ligaments) may have occurred
- Assessment and treatment of these structures clinically include manual therapy (joint mobilizations, soft tissue work), and proper home care (Exercises, posture education, etc)
- Some injection therapies to help stabilize ligament injuries
- Coach and therapist can work together to progress through Return to Play

Vestibular System Treatment

- Lies within the inner ear
- Contributes to balance, spatial orientation
- Disruption to this system may occur during an injury, and can cause symptoms such as dizziness, and nausea
- Assessment and treatment involves movement tests and specific maneuvers, and may or may not involve home exercises
- Done by a therapist with “Vestibular Rehabilitation” training

Oculo-Motor System Treatment

- Vision system
- Problems with vision after concussion may occur and can be retrained
- Assessment and treatment include vision tools (possibly glasses) and home exercises to re-train the system
- Referral to vision specialist may be needed
- Many therapists incorporating these techniques

Cognitive/Emotional Treatment

- The ability for our brains to work at full capacity are often affected during a concussion
- Emotions may also be affected
- Injury is not “in your head” but the brain is the main control and can have an affect
- Referral to neuro-psychologist, sport psychologist, clinical psychology, etc
- Treatment techniques to help manage symptoms

Role as a Coach in Clinical Treatments

- Take responsible lead on “Return to Riding” guidelines
- Ensure the athlete has had all the “Systems” evaluated and treated (may need to take the lead role if no IST support in place)
- Work with therapy team during “Return to Riding”

Take Home Points

- If suspected concussion-SIT THEM OUT
- Importance of gradual return to play (remember to go back a step if symptoms return)
- Use SCAT3 for baseline/injury assessment/monitoring
- Assessment and treatment of all systems an asset to successful return to play

Questions

- Resources: Cycling Canada website; Coaches Resources
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