FEDERATION INTERNATIONALE
DE MOTOCYCLISME

Concussion Guidelines

Assessment & Management

Contents

Foreword

Concussion is now recognised as a significant injury that, as a type of traumatic brain injury, if not recognised and managed appropriately can lead to potentially significant long-term impacts on health and well-being.

Since 2011 the FIM has included references and links to the International Consensus Statement on Concussion in Sport following the International Conference on Concussion in Sport which are updated approximately every four years. The most recent statement was issued in 2022 following the 6th International Conference on Concussion in Sport held in Amsterdam. This included the 6th version of the Sport Concussion Assessment Tool (SCAT6). However, it has become apparent that this assessment tool based on the Consensus Statement is, in several elements, not directly applicable to motorcycle sport.

Concussion in our sport was therefore included as the main theme for the first FIM Medical Summit in 2024 in Lyon, France and included presentations from several leading international experts including a co-author of the International Consensus Statement and from within motorcycle sport and other sports.

These guidelines reflect the agreement of FIM Medical Commission as an outcome of the Summit to develop concussion assessment and management guidelines specifically for our sport at all levels of racing. It was also agreed that education and awareness are paramount and an education program of education for our riders, teams, officials and federations is being developed in association with these guidelines.

These guidelines will provide clear and consistent procedures for doctors and riders to follow in the assessment of concussion and the process for return to sport following a concussion.

The first edition of these guidelines follows an extensive review of current research and guidelines and consultation with some of our FMNs and other sports.

It is intended that these guidelines will be regularly reviewed and updated in accordance with ongoing scientific research, emerging clinical evidence and best clinical practice to ensure our riders receive the highest standards of care for concussion to protect their health, well-being and safety.

Dr David McManus
FIM Medical Director
Director FIM International Medical Commission

Acknowledgements

FIM is indebted to many individuals and organisations for their expertise, assistance and guidance in the development of these guidelines. These include but are not limited to;

Members of the FIM International Medical Commission

Motorcycling Australia

Federal Government of Australia

FIM Academy

Dr Michael Turner, Medical Director and CEO of The International Concussion and Head Injury Research Foundation (ICHIRF)

Federation Internationale Automobile

World Rugby

Important Note on Application of Guidelines

FIM Concussion Guidelines are activated the moment the nature of the injury/illness is identified on the Injury Report Form as concussion, irrespective of the severity of the concussion or if it is considered a suspected concussion.

Any reported concussion is therefore required to follow the FIM Return to Sport Framework.

The concussion clearance assessment must be completed by a Medical Practitioner: a medical doctor qualified and registered to practice in the country of the event. This includes a GP, emergency physician, sports physician, neurologist, or any other medical doctor who has the experience in sports related concussion and motorcycle sports.

The concussion clearance can only be completed by a medical doctor and cannot be completed by a physiotherapist, nurse, chiropractor or non-medical doctor.

Concussion Facts

1. A concussion is a traumatic brain injury

2. All concussions are serious

3. Concussions can occur without loss of consciousness

4. All riders with any new symptoms following a head injury:
   - must be removed from riding or training
   - must not return to riding or training until symptom free or until all concussion-related symptoms have cleared or have returned to pre-concussion level
   - must complete a Graduated Return To Ride programme
   - should be assessed by a medical practitioner

5. The mandatory minimum period of exclusion is 10 days from diagnosis, including the day of the incident

6. Recognise and Remove from racing to help prevent further injury or even death

7. Head injuries can be fatal – do not return to ride if symptoms persist

8. Most riders with concussion recover with physical and mental rest

These guidelines follow the **"9 R's"** of Sport-Related Concussion management:

The "9 R's"

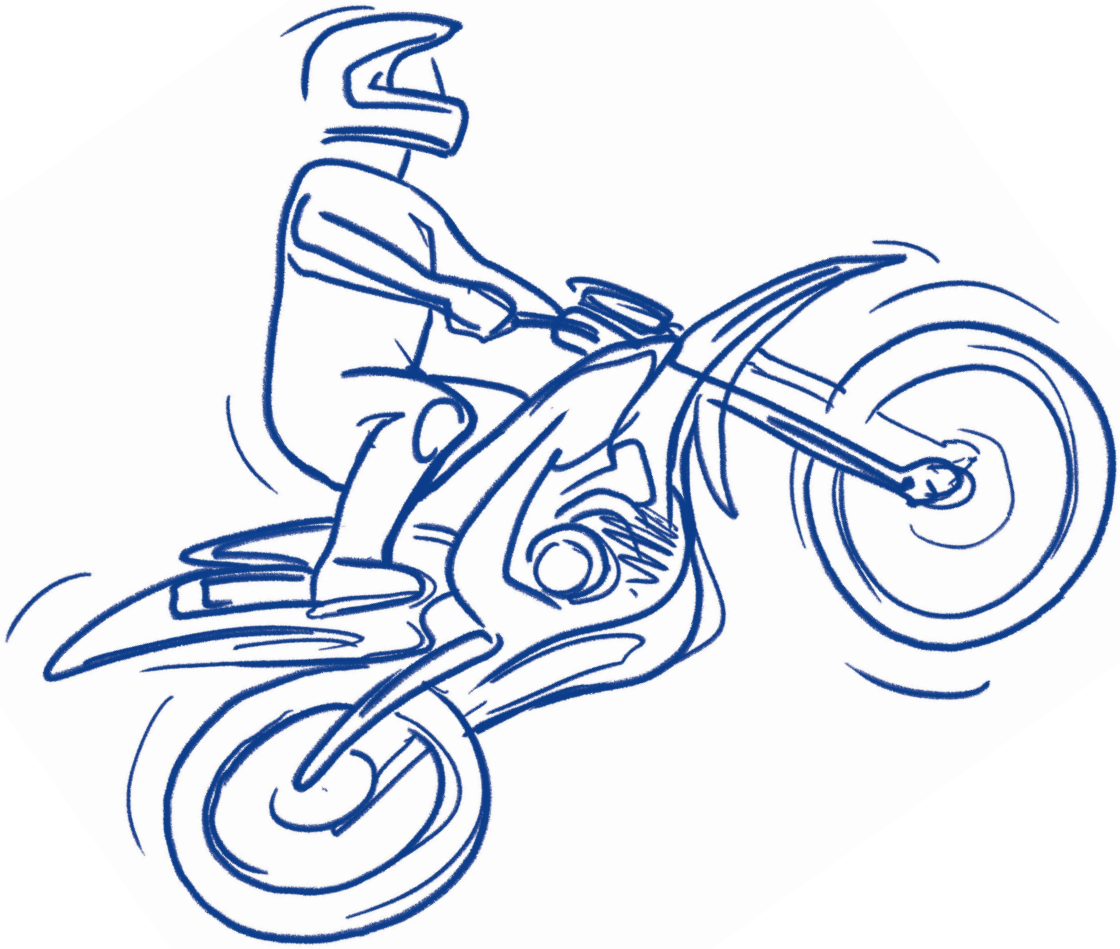
Reduce

Riders and teams should be aware of current FIM safety equipment regulations and FIM homologation requirements. Appropriately homologated and well-fitting safety apparel and equipment is important to reduce the risk of injury, especially helmets, airbag vests and approved protective clothing.

Optimal concussion management can reduce the risk of future concussion.

Education and awareness are key factors to support the reduction of concussion and its effects.

- ✓ FIM safety equipment regulations
- ✓ FIM homologation requirements



Recognise

Sport-related concussion is a Traumatic Brain Injury (TBI) caused by a direct blow to, or sudden deceleration or rotation of, the head, neck or body resulting in an impulsive force being transmitted to the brain that occurs in sports and exercise-related activities.

Symptoms and signs may present immediately, or evolve over minutes or hours after the incident, and are commonly resolved within days, but may be prolonged to weeks, months or even years.

Initial assessment of any person involved in an incident should first follow standard first-aid procedures. Additional trauma management procedures including Advanced Trauma Life Support and/or Prehospital Trauma Life Support may be required depending on the clinical situation.

Emphasis initially should be on assessing Danger at the scene, Responsiveness of the injured, assessment and management of Airway, Breathing and Circulation.

An unconscious/unresponsive person should not be moved unless for airway management and/or reasons of safety.

Assessment for a potential spinal and/or spinal cord injury is a critical part of the initial evaluation. Only do so if you are appropriately trained.

Do not remove a helmet or any other equipment unless trained to do so safely, or for reasons of immediate risk to the injured e.g. airway management.

It is the responsibility of the rider or their guardian to inform the Chief Medical Officer for the race of any concussion that occurs outside of a FIM activity or event which may cause safety concerns to the rider.

Remove

If in doubt, sit them out

Any rider suspected of having concussion should be removed from riding until they have been evaluated. This may include observations of:

- Mechanism of injury – Any incident that results in a significant impact to the head.
- Reported or witnessed features of concussion such as those described in the Concussion Recognition Tool (below).

Mandatory exclusion periods will be applied if any of the following symptoms or signs are reported or witnessed:

- Loss of consciousness.
- No protective action was taken by the rider in a fall to the ground, directly observed or on video.
- Impact seizure or tonic posturing (abnormal outstretched limbs).
- Confusion, disorientation.
- Memory impairment/amnesia.
- Balance disturbance or motor incoordination (e.g. ataxia – clumsy movement/ walking).
- Rider reports significant, new, or progressive concussion symptoms dazed, blank/ vacant stare or not their normal selves.
- Behaviour change atypical of the rider.

Further evaluation of possible signs or symptoms of concussion can be performed by anyone but preference by persons trained in medical care and/or concussion assessment.

Medical Team, Officials, Teams and Crew

- Use Concussion Recognition Tool 6 (CRT6) .

Healthcare Professionals

- If the person is 13 years old or older Use Sports Concussion Assessment Tool 6 (SCAT6).
- If the person is less than 13 years old Use Child Sports Commission Assessment Tool 6 (Child SCAT6).

For SCAT6/CRT6 – Suggested modifications to the Maddocks/Awareness questions for the motorcycle rider/official.

- **"Where are we today?"**
- **"What session were you riding in?.**
- **"What was the turn/stage/section that your incident occurred on?"**
- **"What circuit/event were you last at prior to this one?"**
- **"What was your result at the last event you attended?"**

Failure to answer any of these questions correctly may suggest a concussion.

Refer

Post Evaluation

- Any **"Red Flag"** symptoms and signs should have an ambulance called urgently if no doctor is immediately present.
- Refer for further evaluation "If in doubt, sit them out".
- Rider suspended from competition pending further evaluation and/or clearance.

Red Flag's

- Neck pain or tenderness on palpation
- Seizure or convulsion
- Loss of consciousness
- Reduced Glasgow Coma Scale (GCS) <15
- Increasing confusion, agitation or irritability
- Visual disturbance e.g. double vision, abnormal eye movement
- Hearing disturbance e.g. tinnitus
- Weakness or altered sensation in limbs
- Deteriorating level of consciousness
- Vomiting
- Severe or increasing headache
- Visible skull deformity

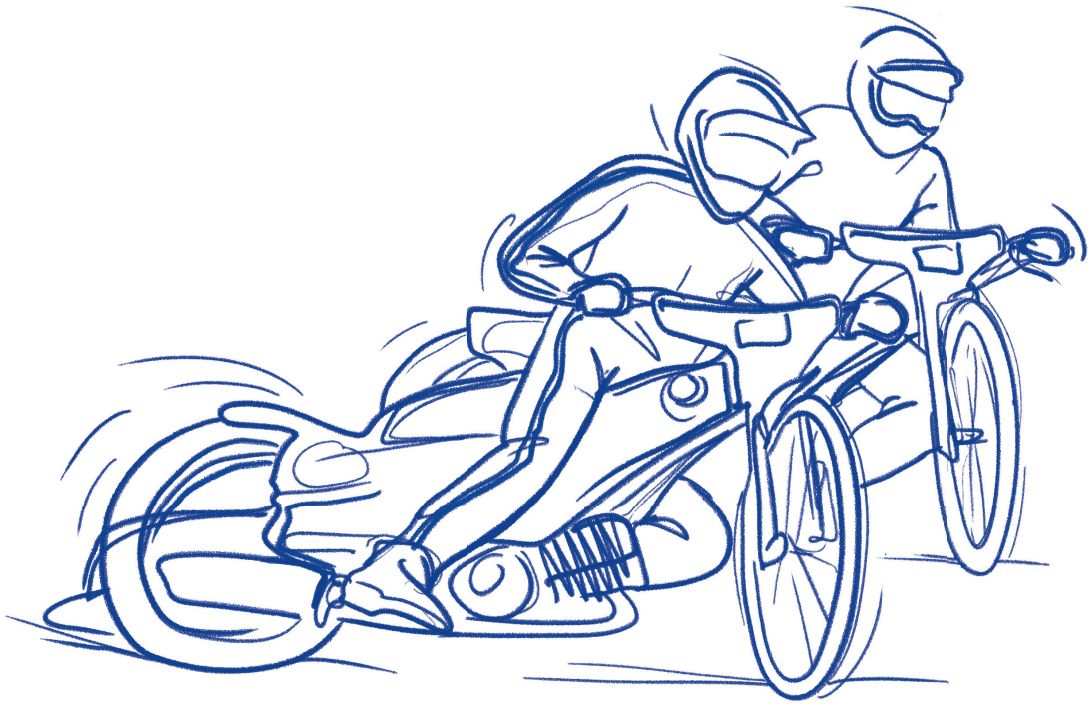
NOT suspected of concussion: cleared to return to competition

If there is any doubt in the case of suspected concussion, then the person should be removed from the riding until they are further evaluated by a health care provider.

Those with clear concussion symptoms should be referred to their own doctor and/or emergency department as well as a healthcare provider experienced in the assessment and management of concussion.

Any rider meeting the criteria for hospital referral or transport to hospital for a CT Scan and/or hospital admission must be immediately transferred to the appropriate receiving hospital by ambulance. (Refer to UK NICE head injury guidelines)

If in doubt, sit them out



NICE* Head injury Guidelines 2023

Refer riders who have sustained a head injury to a hospital emergency department if there are any of these risk factors:

Guidelines

- **Any loss of consciousness because of the injury, from which the person has now recovered** .
- **Amnesia for events before or after the injury** ('problems with memory'; it will not be possible to assess amnesia in children who are preverbal and is unlikely to be possible in children under 5).
- **A persistent headache since the injury.**
- **Any vomiting episodes since the injury.**
- **Any previous brain surgery.**
- **Any history of bleeding or clotting disorders.**
- **Current anticoagulant or antiplatelet** (except aspirin monotherapy) **treatment.**
- **Any safeguarding concerns.**
- **Irritability or altered behaviour** (easily distracted, not themselves, no concentration, no interest in things around them).
- **A Glasgow Coma Scale (GCS) score of less than 15 on initial assessment.**
- **Any focal neurological deficit since the injury.**
- **Any suspicion of a complex skull fracture or penetrating head injury since the injury.**
- **Any seizure since the injury.**
- **A high-energy head injury.**
- **Continuing concern by the professional about the diagnosis.**

National Insitute for Health and Care Excellence

Rest

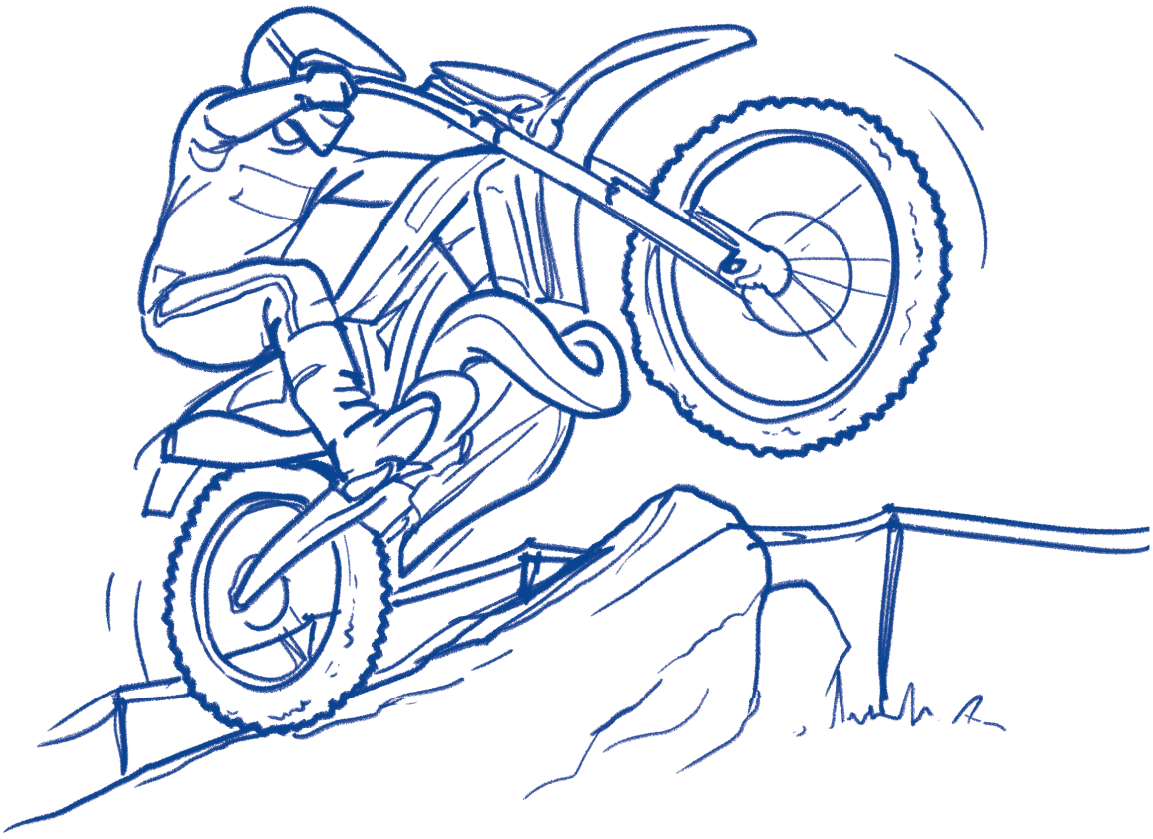
Relative rest and reduced screen time are encouraged for the first 48 hours. Strict rest, dark room and total screen restriction is no longer recommended.

Light physical activity is encouraged even if it mildly exacerbates symptoms. If moderate to severe symptoms occur, then activity should be reduced.

Individuals should systematically increase the levels of physical activity and exertion based on their symptoms and exacerbation of those symptoms.

Discussion and clear planning with their healthcare provider is strongly recommended.

Relative rest for the first 48 hours



Recover

Recovery and rehabilitation should be monitored and coordinated by interdisciplinary teams including medical practitioners and physiotherapists as well as concussion specialists as required.

Assessment of clinical recovery should incorporate three components:

- Resolution of symptoms.
- Resolution of symptoms under dynamic load including maximal exercise and cognitive load.
- Completion of a Return-To-Sport program.

SCAT6/Child SCAT6 and SCOAT6 are most useful for evaluation and re-evaluation in the first 72 hours, although their utility still exists for up to 5-7 days.

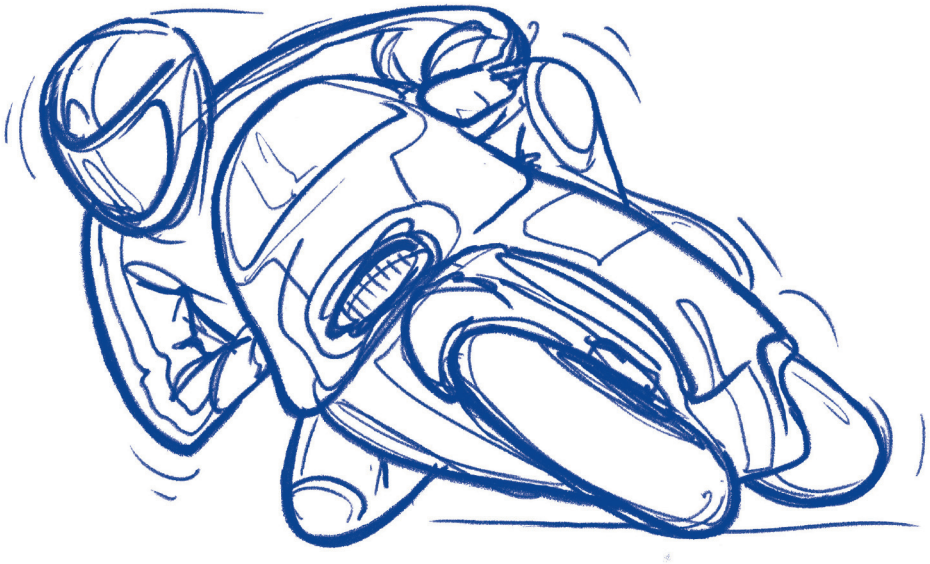
The severity of acute and sub-acute symptoms are predictors of slower recovery.

Re-evaluation by a specialist or healthcare provider after the initial 72 hours and/or diagnosis of concussion may include the use of office-based assessment tools and/or other assessment tools including imaging and functional assessments.

More expansive office-based assessment tools include:

- Sports Concussion Office Assessment Tool 6 (SCOAT6).
- Child Sports Concussion Office Assessment Tool 6 (Child SCOAT6).

Concussion is a traumatic brain injury



Rehabilitation

Symptoms lasting more than 10 days should be referred to a specialist for a detailed evaluation and specific rehabilitation program.

Active symptoms persisting for greater than four weeks in children and adolescents should be referred for multi-specialist input.

Symptoms that recur during a Return-to-Sport or Return-to-Learn Program may also benefit from specific rehabilitation programs.

Specific rehabilitation program

Return-to-sport

Gradual Return to Riding/Racing Program (GRTR)

No competitor diagnosed with concussion may return to racing without clearance by a medical practitioner AFTER completing a Return-to-Sport program.

From the perspective of brain development, an **adult is considered to be 18 years and over.**

- **The mandatory minimum period of exclusion is 10 days from diagnosis, including the day of the incident.**
- **Permitted to return to sport on the 11th day.**

From the perspective of brain development, a **child is considered to be 17 years and younger.**

- **The mandatory minimum period of exclusion is 20 days from diagnosis, including the day of the incident.**
- **Permitted to return to sport on the 21st day.**

Return-To-Learn (RTL) programs are not required for all individuals but may be of benefit to those who have difficulty with cognitive tasks post-concussion and those that have exacerbation of symptoms during screen time and when performing cognitive tasks.

Detailed Return-To-Sport (RTS) programs should be followed in a stepwise fashion with increasing levels of exertion, cognitive load and RTS and RTL should occur in parallel.

The Return-to-Sport Protocol should be supervised by a medical practitioner. If this is their second concussion within (6) six months or third concussion ever, then a specialist review by a specialist familiar with concussion management is required immediately. Those with three or more concussions require yearly review and clearance by the specialist.

Please see the appendices for RTS and RTL procedures.

Review

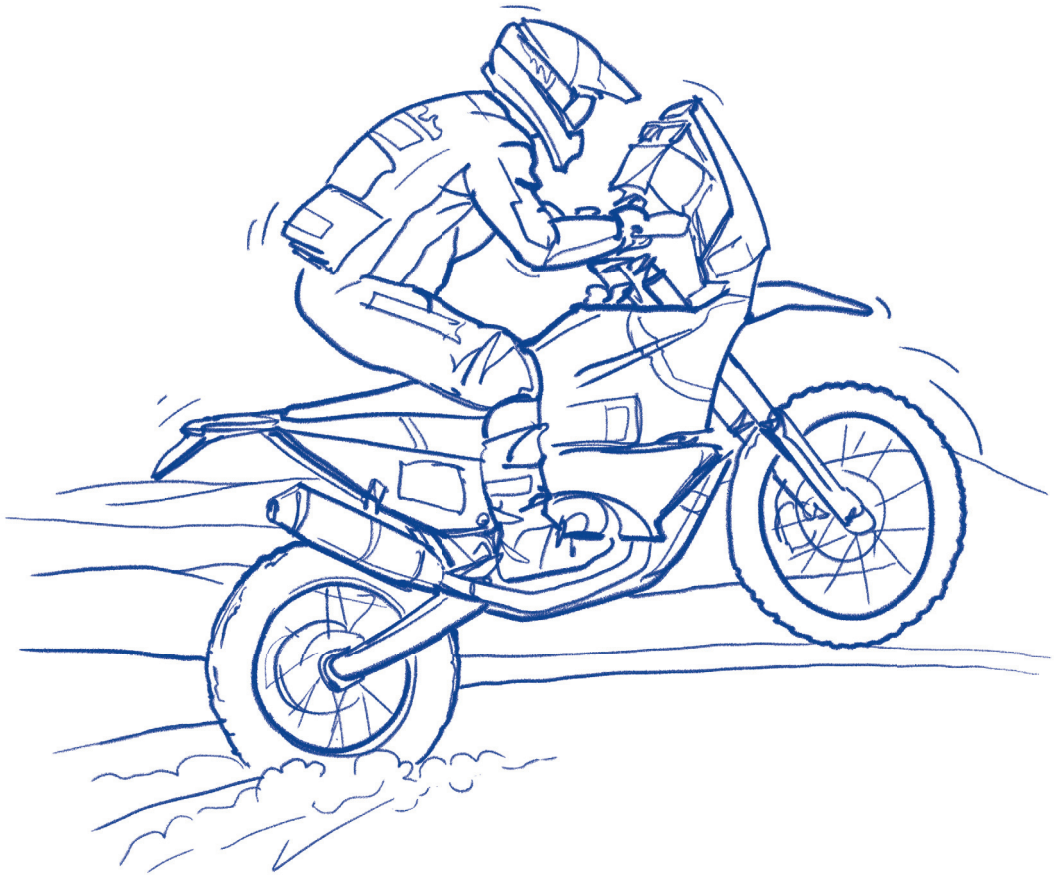
Effects of concussion and repeated concussion may have long term health implications. Specialist consultation is encouraged and is mandated in those with repeated concussions. An assessment of the balance of risks and rewards should be considered including possible long-term effects of concussion and repeated concussion.

A decision to retire from sport may need to be considered for those with multiple concussions, severe symptoms and/or risk assessment in consultation with a specialist.

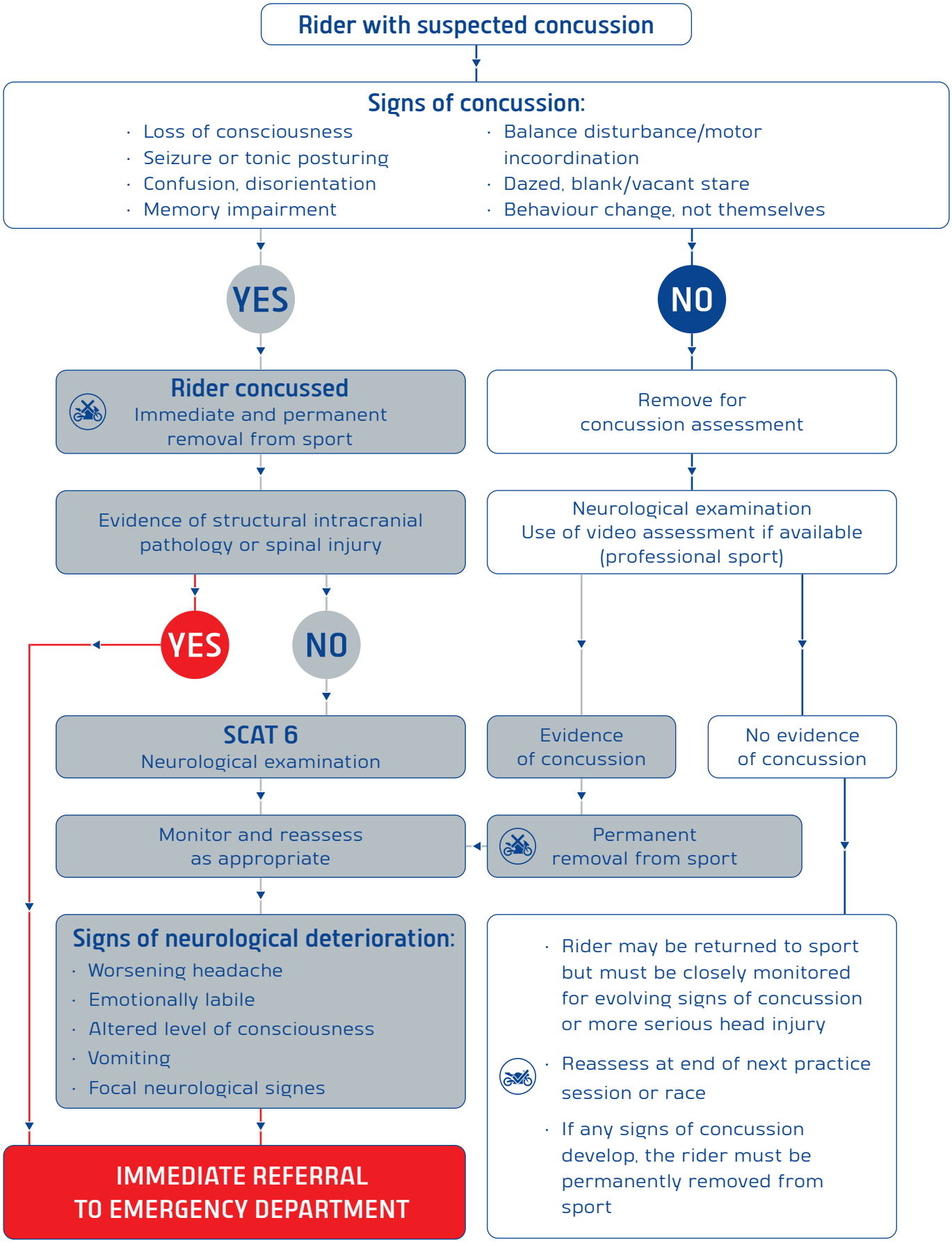
Children and adolescent concussion should also take into account the possible impacts on learning and long-term implications in development. Repeated concussions in children and adolescents require specialist input and regular clearance to compete in sport, not restricted to motorcycle sport.

Ongoing residual effects from concussion may occur. Those suffering from long term symptoms or sequelae should actively engage a specialist in concussion management.

Assessment of the balance of risks and rewards



Medical Trackside Assessment*



*Adapted from Concussion Recognition Toll (CRT6)

Non-Medical Trackside Assessment*

Rider with suspected concussion

On-track signs of Concussion:

- Loss of consciousness
- Lying motionless, slow to get up
- Seizure
- Confusion, disorientation
- Memory impairment
- Balance disturbance/motor incoordination
- Nausea or vomiting
- Headache or 'pressure in the head'
- Visual or hearing disturbance
- Dazed, blank/vacant stare
- Behaviour or emotional changes, not themselves

Things to look out for at the time of injury

Immediate and permanent removal from sport
Take normal first aid precautions including neck protection

Red Flags

- Neck pain
- Increasing confusion, agitation or irritability
- Seizure or convulsion
- Weakness or tingling/burning in the arms or legs
- Deteriorating conscious state
- Severe or increasing headache
- Unusual behavioural change
- Visual or hearing disturbance
- Repeated vomiting

YES → **IMMEDIATE REFERRAL TO EMERGENCY DEPARTMENT**

NO → **REFER TO MEDICAL PRACTITIONER AS SOON AS PRACTICAL**

*Adapted from Concussion Recognition Toll (CRT6)

Motorcycling specific return to sport framework

Step	Exercise Strategy	Activity at each step		Goal
0		Rest for 24-48 hours after the incident.		Observation.
1	**Symptom limited activity**	If the rider's symptoms have recovered COMPLETELY at rest, commence activities of daily living (such as reading, walking, watching TV, etc.) and returned to full work and/ or school, without restrictions or the need for medication.		Gradual return to typical activities.
2	**Aerobic Exercise** (up to 70% Max HR)	The rider to complete stationary cycling, walking at slow to medium pace and start light resistance training. The rider is to remain free of concussion related symptoms during the completion of a light/moderate aerobic exercise session.		Increased heart rate. See if physical activity highlights any concussion symptoms.
REST DAY				
3	**Individual Sport Specific Exercise**	The rider to complete sport-specific training away from the track environment (e.g., running, change of direction, cycling, and/or individual training drills) including computer gaming/race simulators/ low impact recreational karting. No activities at risk of head impact.		Add movement and change in directions. Observe if increased physical activity and G-force simulation highlights any concussion symptoms. Observe if simulated cognitive activity highlights any concussion symptoms.
REST DAY				
4	**Non-Impact Training Drills**	The rider to complete high-intensity exercise including more challenging aerobic training drills. Continued computer gaming/race simulators/ low impact recreational karting to be completed after high aerobic exercise.		Increased intensity of training. Observe if increased physical activity and G-force simulation highlights any concussion symptoms. Observe if simulated cognitive activity highlights any concussion symptoms.
REST DAY				
5	**Mandatory Exclusion Period** Note, the Mandatory Exclusion Period must be adhered to, regardless if the certificate is provided prior to the exclusion period's end.	**Adult** From the perspective of brain development an Adults is considered to be 19 years and over. The minimum period of exclusion for an Adult is 10 days from diagnosis, including the day of the incident. Permitted to return to sport on the 11th day.	**Child** From the perspective of brain development, a Child is considered to be 17 years and younger. The minimum period of exclusion is 20 days from diagnosis, including the day ofthe incident. Permitted to return to sport on the 21st day.	If the rider feels confident to return to the sport. The rider must obtain a Medical Concussion Clearance from a medical practitioner and then present that to the Relevant SCB.
Once the following process has been adhered to: · Return to Sport Framework completed. · The minimum timelines met. · The specific Medical Concussion Clearance completed by a medical practitioner.				
6	**Full Practice**	Participate in normal training. High speed motorcycling, private practice, event practice sessions (with clinical review post session).		Restore confidence and assess functional skills by coaching staff.
7	**Return To Competition**	Normal event inclusion. Practice, qualifying and racing/ competition.		

Table developed with reference to the Motorcycling Australia Concussion Guideline 2024

References

- **Consensus statement on concussion in sport:**
  The 6th International Conference on Concussion in Sport
- **International Consensus Statement on Concussion in Sport:**
  The 6th International Conference on Concussion in Sport
  Patricios JS, Schneider KJ, Dvorak J, et al Consensus statement on concussion in sport: The 6th International Conference on Concussion in Sport-Amsterdam, October 2022 British Journal of Sports Medicine 2023;57:695-711.
- **Concussion Recognition Tool 6**
  The Concussion Recognition Tool 6 (CRT6) British Journal of Sports Medicine 2023;57:692-694.
- **SCAT 6**
  Sport Concussion Assessment Tool 6 (SCAT6) British Journal of Sports Medicine 2023;57:622-631
- **Child SCAT 6**
  Child SCAT6 British Journal of Sports Medicine 2023;57:636-647.
- **Concussion in Sport Australia Website**
  Retrieved July 1, 2023 from https://www.concussioninsport.gov.au/
- **Concussion and Brain Health (CBH) Project 2021-2024**
  Retrieved July 1, 2023 from https://www.concussioninsport.gov.au/
- **Motorcycling Australia Concussion Guideline (2024)**
  Retrieved December 1, 2024 from www.ma.org.au/wp-content/uploads/2024/07/Motorcycling-Australia-Concussion-Management-2024-Final.pdf
- **· UK National Institute for Health and Care Excellence (NICE)**
  Head injury: assessment and early management NICE Guideline Reference number:NG232. Published: 18 May 2023 https://www.nice.org.uk/guidance/ng232 including imaging algorithm pdf 13061125549
- **World Rugby Concussion Guidance** ver 3 Dec 2017
- **Diagnostic tools for return-to-play decisions in sports-related concussion**
  Dennis Wellm and Karen Zentgraf Journal of Concussion Volume 7: 1-18 2023