

Sports Related Concussion

Graduated return to Play (GRTP)

Sports Related Concussion has proven to be a major concern with possible serious short and long term debilitating consequences. Concussion is associated with an increased risk of developing serious neurological conditions at a young(er) age.

Mismanagement of concussion is considered an important reason for prolonged symptoms. Therefore, it is important to take every (suspected) concussion seriously!

Graduated Return to Sports (GRTP)

Begin at Phase 1 in the event of a (suspected) concussion, and then follow the phases outlined in the protocol. When progressing through the protocol (after Phase 1), the individual must be completely symptom-free for at least 24 hours before moving on to the next recovery phase. If symptoms reappear at any point during recovery, it is necessary to step back to the previous phase.

It is always recommended to consult a (para)medical professional with expertise in concussion management for assessment and guidance.

Phase 1

Physical and cognitive rest

Physical and cognitive relative rest
Limit daily activities, social interaction, and physical exertion.
Activities should not cause an increase in symptoms.

Avoid screen use during the first 24–48 hours (TV, computer, phone, etc.).

Progression to Phase 2A or 2B:

Phase 2A:
After a minimum of 24 and a maximum of 48 hours, if (mild) symptoms persist.

Phase 2B:
After a minimum of 24 and a maximum of 48 hours, if completely symptom-free.

Phase 2

Phase 2A: Light aerobic exercise

If (mild) symptoms persist after Phase 1:
Reinstate light physical activity.

Engage in mild aerobic exercise up to a maximum of 55% of the maximum heart rate (220 minus age), in a safe and controlled environment.

Phase 2B: Moderate aerobic exercise

If completely symptom-free after Phase 1 or Phase 2A:
Reintroduce moderate physical activity.

Engage in aerobic exercise up to a maximum of 70% of the maximum heart rate (220 minus age), in a safe and controlled environment.

Allow rest periods and adjust activities as needed to enable a gradual progression in aerobic exercise intensity.

Training is preferably conducted under the supervision of a qualified professional.

Examples of activities:
Stationary cycling (ergometer)
Walking at a low to moderate intensity

Progression to Phase 2B:

After being completely symptom-free for 24 hours during Phase 2A.

Progression to Phase 3:

After being completely symptom-free for 24 hours during Phase 2B.

Phase 3

Daily activities & sport-specific (partial) activities (without any risk of head impact)

Gradually resume daily activities (e.g., work, school, etc.).

Continue the progressive increase in aerobic exercise intensity and the development of sport-specific movements and directional changes.

Light resistance training may be initiated.

Training is preferably conducted under the supervision of a qualified professional.

Important

Prior to advancing to Phase 4, it is recommended that the individual is assessed by a (para)medical professional with expertise in concussion management

Progression to Phase 4:

After being completely symptom-free for 24 hours during Phase 3.
AND
Having fully resumed school and/or work activities without symptoms
AND
Positive (para)medical clearance.

Phase 4

Sport-specific training (without physical contact)

Sport-specific training at normal intensity, incorporating more demanding coordination exercises in combination with cognitive tasks.

Functional load tolerance and restoration of appropriate performance level should be evaluated by the coach or trainer.

Examples:

Passing drills
Multiplayer training formats
Strength training under supervision
Sport-specific training without physical contact

Progression to Phase 5:

After being completely symptom-free for 24 hours during Phase 4.

Phase 5

Sport-specific training (non-competitive)

Full return to all non-competitive (intensive) sports activities, including those involving (risk of) falls, physical contact, strength, and conditioning training.

Focus on restoring confidence in full participation in sports activities.

Performance level should be assessed by the coach or trainer.

Examples:

Regular sport-specific training
Regular strength and conditioning training
Regular physical education classes or other sports activities

Important

Competitive sports participation should still be avoided (for example, matches or competitions)

Progression to Phase 6:

After being completely symptom-free for 24 hours during Phase 5.

Phase 6

Return to sports

Full return to competitive sports participation.

Functional skills should be evaluated by coaches and trainers.

Performance level and readiness for participation should be assessed by the coach or trainer.

Different sports and their respective federations apply varying criteria for return to sport following a diagnosed concussion, but most adhere to a mandatory Graduated Return-to-Sport (GRTP) protocol, with a minimum of 24 hours per rehabilitation phase as standard practice.

Some federations recommend minimum recovery timelines that differ by age group (e.g., children versus adolescents), while others extend the recovery period in cases of repeated concussions or persistent symptoms.

(E.g. World Rugby advises a minimum recovery period of 21 days, unless otherwise determined by a medical professional with specific expertise in concussion management)

Important

Returning to competitive sports participation before full recovery increases the risk of prolonged symptoms and raises the likelihood of recurrent (and more severe) concussion symptoms or other serious injuries.

In addition to a structured return-to-sport protocol, adjunctive treatment (such as manual therapy, physiotherapy, dietetics, behavioral therapy, etc.) may, in some cases, contribute to a more favorable or accelerated recovery.

It is strongly advised that such treatment be provided only by practitioners with experience in concussion management.



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This protocol serves as a guideline and should never replace or alter medical advice.
Developed with reference to the Consensus Statement on Concussion in Sport (October 2022).



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Assessment by a (para)medical professional with expertise in concussion management is strongly recommended before resuming any "at-risk" activities that involve potential danger (e.g., physical contact, falls, collisions, etc.).

! Phases 4–6 should only be initiated once completely symptom-free !