Procedure Title	**Concussion Protocol**
Responsible	**Operations – Chief Executive Officer**
Date of Approval	**May 2025**
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Adapted from: Parachute. (2024). Canadian Guideline on Concussion in Sport (2nd edition). http://www.parachute.ca/guideline

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1. PROTOCOL STATEMENT

Institut National du Sport du Québec (INSQ) in collaboration with **Water Polo Canada (WPC)** has developed the **WPC Concussion Protocol** to help guide the management of **PLAYERS** who may have a suspected concussion as a result of participation in **WPC** activities.

**Note: although this protocol specifically identifies "players", this protocol applies to all WPC Registrants including but not limited to players, athletes, coaches, officials, delegates, administrators, executives and volunteers.*

2. PURPOSE

This protocol covers the recognition, medical diagnosis, and management of **PLAYERS** who may sustain a suspected concussion during a sport activity. It aims to ensure that players with a suspected concussion receive timely and appropriate care and proper management to allow them to return back to their sport safely. This protocol 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.

2.1. Who should use this protocol?

This protocol is intended for use by all individuals who have a role interacting with players inside and outside the context of school/work and non-school based organized sports activity, including other players, athletes, parents/caregivers, coaches, officials, delegates, teachers, trainers, executives, volunteers and licensed healthcare professionals.

For a summary of the **WPC Concussion Protocol** please refer to the **WPC Concussion Pathway** figure at the end of this document.

3. 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 (players, parents, coaches, officials, teachers, trainers, licensed healthcare professionals) on current evidence-informed approaches that can prevent concussion and more serious forms of head injury and help identify and manage a player 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 a player has suffered a suspected concussion or more serious head injury,
- what measures should be taken to ensure proper medical assessment, including *Return-to-School/Work* and *Water Polo-Specific Return-to-Sport Strategies*, and
- return to sport medical clearance requirements

All parents and players are required to review and submit a signed copy of the Pre-season Concussion Education Sheet to their coach prior to the first practice of the season. In addition to reviewing information on concussion, it is also important that all sport stakeholders have a clear understanding of the WPC Concussion Protocol. For example, this can be accomplished through pre-season in-person orientation sessions for players, parents, coaches and other sport stakeholders.

- **Who:** Players, parents, coaches, officials, teachers, and trainers, licensed healthcare professionals
- **How**: Pre-season Concussion Education Sheet

4. HEAD INJURY RECOGNITION

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including players, parents/caregivers, coaches, teachers, officials, trainers, and licensed healthcare professionals, are responsible for the recognition and reporting of players with a suspected concussion. This is particularly important because many sport and recreation venues will not have access to on-site licensed healthcare professionals.

4.1. Suspected concussion

A concussion should be suspected if a player sustains an impact to the head, face, neck or body and:

- **demonstrates one or more observable signs** of a suspected concussion (as detailed in the Concussion Recognition Tool 6), OR
- **reports one or more symptoms** of suspected concussion (as detailed in the Concussion Recognition Tool 6).

This includes cases where the impact wasn't witnessed, but anyone witnesses the player exhibiting one or more observable signs of suspected concussion or the player reports one or more symptoms of suspected concussion to one of their peers, parents/caregivers, coaches or teachers.

In all cases of suspected concussion, the player should be removed from the activity immediately and undergo medical assessment as soon as possible.

4.2. Delayed signs and symptoms

If a player is removed from play following an impact for cautionary reasons, but there are no observable signs or symptoms of a suspected concussion, then the player can be returned to play but should be monitored for delayed symptoms for up to 48 hours.

4.3. Red flag symptoms

In some cases, a player may show signs or symptoms that potentially indicate a more severe head or spine injury, including loss of consciousness, convulsions, worsening headaches, repeated vomiting or neck pain (see a detailed list in the Concussion Recognition Tool 6).

If a player demonstrates any red flags, a more severe head or spine injury should be suspected, principles of first aid should be followed and emergency medical assessment should be pursued.

- **Who**: Players, parents/caregivers, coaches, officials, teachers, trainers and licensed healthcare professionals
- **How:** Concussion Recognition Tool 6

5. ONSITE MEDICAL ASSESSMENT

Depending on the suspected severity of the injury, an initial assessment may be completed by emergency medical professionals or by an on-site licensed healthcare professional where available.

In cases where a player loses consciousness or it is suspected a player might have a more severe head or spine injury, Emergency Medical Assessment by emergency medical professionals should take place (see 5a below). If a more severe injury is not suspected, the player should undergo Sideline Medical Assessment or Medical Assessment, depending on if there is a licensed healthcare professional present (see 5b below).

5a. Emergency Medical Assessment

If a player is suspected of sustaining a more severe head or spine injury during a game or practice, an ambulance should be called immediately to transfer the patient to the nearest emergency department for further Medical Assessment.

Coaches, parents/caregivers, teachers, trainers and officials should not make any effort to remove equipment or move the player and the player should not be left alone until the ambulance arrives. After the emergency medical services staff has completed the Emergency Medical Assessment, the player should be transferred to the nearest hospital for Medical Assessment.

In the case of youth (under 18 years of age), the player's parents should be contacted immediately to inform them of the player's injury. For players over 18 years of age, their emergency contact person should be contacted if one has been provided.

- **Who**: Emergency medical professionals

5b. Sideline Medical Assessment

If a player is suspected of sustaining a concussion and there is no concern for a more serious head or spine injury (i.e., no red flags), the player should be immediately removed from the field of play.

Scenario 1: If a licensed healthcare professional is present
The player should be taken to a quiet area and undergo Sideline Medical Assessment using the Sport Concussion Assessment Tool 6 (SCAT6) or the Child SCAT6.

The SCAT6 and Child SCAT6 are clinical tools that should only be used by a licensed healthcare professional that has training and experience using these tools. These tools can be used as part of the overall clinical assessment and screening for concussion. It is important to note that the results of SCAT6 and Child SCAT6 testing can be normal in the setting of acute concussion and that signs and symptoms may evolve over time. As such, these tools can be used by licensed healthcare professionals to document initial symptoms and neurological status but should not be used to make sideline return-to-sport decisions in youth players. Any youth player who is suspected of having sustained a concussion must not return to the game or practice and must be referred for Medical Assessment.

Scenario 2: If there is no licensed healthcare professional present
The player should be referred immediately for medical assessment by a medical doctor or nurse practitioner, and the player must not return to play until receiving medical clearance.

- **Who**: Athletic therapists, physiotherapists, medical doctor
- **How**: Sport Concussion Assessment Tool – 6th Edition (SCAT6)
  Child Sport Concussion Assessment Tool – 6th Edition (Child SCAT6)

6. MEDICAL ASSESSMENT

The medical assessment is responsible for determining whether the player has a diagnosed concussion or not. To provide comprehensive evaluation of players with a suspected concussion, the medical assessment must:

- rule out more serious forms of traumatic brain and spine injuries,
- rule out medical and neurological conditions that can present with concussion-like symptoms, and

- make the differential diagnosis of concussion based on findings of the clinical history and physical examination and the evidence-based use of adjunctive tests as indicated (e.g., CT scan).

Licensed healthcare professionals in Canada whose scope of practice matches these requirements are medical doctors and nurse practitioners. Medical doctors who can evaluate patients with a suspected concussion include pediatricians, family medicine physicians, sports medicine physicians, emergency department physicians, internal medicine physicians, physiatrists (rehabilitation physicians), neurologists and neurosurgeons.

In geographic regions of Canada with limited access to medical doctors (i.e. rural, remote or northern communities), a licensed healthcare professional (i.e. nurse) with pre-arranged access to a medical doctor or nurse practitioner can facilitate this role.

Scope of practice for licensed healthcare professionals can vary by province and territory. Of note:

- In Manitoba, physician assistants can diagnose concussion.
- In Quebec, nurse practitioners cannot diagnose concussion. The role of physiotherapists in the assessment and management of concussion is specified. Learn more.

Players who are determined to have not sustained a concussion should be provided with a Medical Assessment Letter indicating a concussion has not been diagnosed. The player can return to school, work and sport activities without restriction.

Players diagnosed with a concussion should be provided with a Medical Assessment Letter indicating a concussion has been diagnosed. The player must follow a gradual return to activities, including school, work and sport activities (see 7. Concussion Management).

Because the Medical Assessment Letter contains personal health information, it is the responsibility of the player or their parent/caregiver/legal guardian to provide this documentation to the player's coaches, teachers or employers. It is also important for the player or coach to provide this information to sport organization administrators who are responsible for injury reporting and concussion surveillance, where applicable.

- **Who**: Medical doctor, nurse practitioner, nurse
- **How:** Medical Assessment Letter

7. CONCUSSION MANAGEMENT

When a player has been diagnosed with a concussion, it is important that the player's parent/caregiver/legal guardian is informed. All players diagnosed with a concussion must be provided with a standardized Medical Assessment Letter that notifies the player and their parents/caregiver/legal guardians/spouse that they have been diagnosed with a

concussion and may not return to any activities with a risk of concussion until medically cleared to do so by a medical doctor or nurse practitioner. Because the Medical Assessment Letter contains personal health information, it is the responsibility of the player or their parent/caregiver/legal guardian to provide this documentation to the player's coaches, teachers, or employers. It is also important for the player to provide this information to sport organization officials that are responsible for injury reporting and concussion surveillance where applicable.

Players 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. Players diagnosed with a concussion are to be managed according to their Return-to-School/Work and Sport-Specific Return-to-Sport Strategy under the supervision of a medical doctor or nurse practitioner. When available, players should be encouraged to work with the team athletic therapist or physiotherapist to optimize progression through the Water Polo-Specific Return-to-Sport Strategy. Once the player has completed their Return-to-School and Water Polo-Specific Return-to-Sport Strategy and are deemed to be clinically recovered from their concussion, the medical doctor or nurse practitioner can consider the player for a return to full sports activities and issue a Medical Clearance Letter.

The stepwise progressions for Return-to-School/Work and Return-to-Sport Strategies are outlined below. Note that these strategies begin at the same time, can happen concurrently and the first step of both is the same.

7.1. Return-to-School/Work Strategy

The following is an outline of the Return-to-School/Work Strategy that should be used to help players, parents, and teachers/employers to collaborate in allowing the player to make a gradual return to school/work activities. Depending on the severity and type of the symptoms present players will progress through the following stages at different rates. This tool is a recommendation and should not replace medical advice.

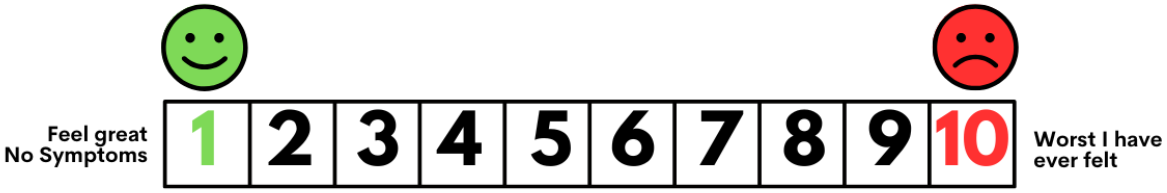
Medical clearance is not required to return to school/work, except for full participation in school-based sport and physical activity. For players returning to work, medical clearance should be sought if work-related tasks put the safety of the player or others at risk. Return to sport/work and physical activity should be guided by the Water Polo-Specific Return-to-Sport Strategy.

Students/working professionals do not need to be symptom-free to return to school and complete absence from school/work of more than one week is not recommended. It is common for a player's symptoms to worsen slightly with activity. This is acceptable as they progress through steps so long as the symptom exacerbation is:

- **mild:** Symptoms worsen by only one to two points on a zero-to-10 scale, and

- **brief:** Symptoms settle back down to pre-activity levels within an hour.

If the player's symptoms worsen more than this, they should pause and adapt activities as needed.



Players should also be encouraged to ask their school if they have a school-specific Return-to-Learn Program in place to help student-players make a gradual return to school.

Step	Activity	Description	Goal of each step
1	Activities of daily living and relative rest (first 24 to 48 hours)	○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms ○ Minimize screen time	Gradual reintroduction of typical activities
After a maximum of 24 to 48 hours after injury, progress to step 2.			
2	School/work activities with encouragement to return to school/work (as tolerated)	○ Homework, reading or other light cognitive activities at school/work or at home ○ Take breaks and adapt activities if they result in more than mild and brief worsening of symptoms ○ Gradually resume screen time, as tolerated	Increase tolerance to cognitive work and connect socially with peers
If the student/working professional can tolerate school activities, progress to step 3.			
3	Part-time or full days at school/work with accommodations (as needed)	○ Gradually reintroduce schoolwork ○ Build tolerance to the classroom and school/work environment over time. Part-time days with access to breaks throughout the day and other accommodations may be required ○ Gradually reduce accommodations related to the concussion and increase workload	Increase academic activities.

If the student/working professional can tolerate full days without accommodations for concussion, progress to step 4.			
4	Return to school/work full-time	○ Return to full days at school/work and academic/professional activities, without accommodations related to the concussion ○ For return to sport and physical activity, including physical education class, refer to the Return-to-Sport Strategy	Return to full academic activities.
Return to school/work is complete.			

Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023

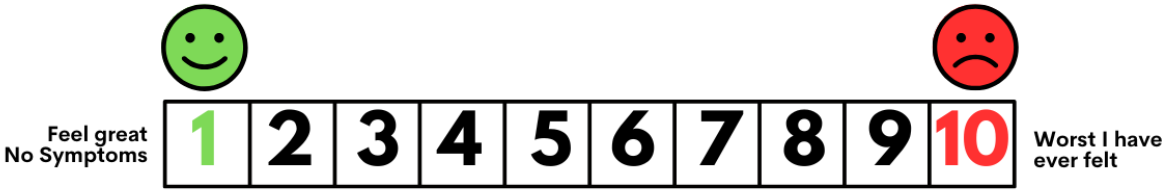
7.2. Water Polo-Specific Return-to-Sport Strategy

The following is an outline of the Return-to-Sport Strategy that should be used to help players, parents/caregivers, coaches, trainers and medical professionals to partner in allowing the player to make a gradual return to sport activities. This tool is a recommendation and should not replace medical advice.

The player should spend a minimum of 24 hours at each step before progressing on to the next. It is common for a player's symptoms to worsen slightly with activity. This is acceptable as they progress through steps 1 to 3 of return to sport, so long as symptom exacerbation is:

- **mild:** symptoms worsen by only one to two points on a zero-to-10 scale, and
- **brief:** symptoms settle back down to pre-activity levels within an hour.

If the player's symptoms worsen more than this, they should stop the activity and try resuming the next day at the same step.



Before progressing to step 4 of the Water Polo-Specific Return-to-Sport Strategy, players must:

- successfully complete all steps of the Return-to-School Strategy (if applicable), and
- provide their coach with a Medical Clearance Letter indicating they have been medically cleared to return to activities with risk of falling or contact.

If the player experiences concussion symptoms after medical clearance (i.e., during steps 4 to 6), they should return to step 3 to establish full resolution of symptoms. Medical clearance will be required again before progressing to step 4.

Water-Polo-Field-Player-Specific Return to Sport Strategy

Step	Activity	Activity details	Goal of each step
1	Activities of daily living and relative rest (first 24 to 48 hours)	○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms ○ Minimize screen time	Gradual reintroduction of typical activities
After a maximum of 24 to 48 hours after injury, progress to step 2.			
2	2A: Light effort aerobic exercise	○ Start with light aerobic exercise*, such as stationary cycling and walking at a slow to medium pace ○ May begin light resistance training that does not result in more than mild and brief worsening of symptoms ○ Exercise up to approximately 55% of maximum heart rate ○ Take breaks and modify activities as needed **Note: Members of WPC's National Teams must consult the team physician prior to the commencement of Step 2A.*	Increase heart rate
	2B: Moderate effort aerobic exercise	○ Gradually increase tolerance and intensity of aerobic activities, such as stationary cycling and walking at a brisk pace ○ Exercise up to approximately 70% of maximum heart rate ○ Take breaks and modify activities as needed **Examples:** <u>Warm up:</u> • Stationary bike or inclined treadmill for 5 min @ 50% HR	

		max
		Exercises:
		• Stationary bike for 20 min @ 70% HR max in interval sets
		• Floor stretching routine:
		  ○ Gluteals
		  ○ Latissimus
		  ○ Quadriceps
		  ○ Hamstrings,
		  ○ Adductors
		  ○ Butterfly stretch
		  ○ Happy baby pose
		  ○ Pigeon stretch
		• Use a foam roller on key areas such as hips, back and shoulders
		• Mobility work for hip flexion, rotations, extension	

If the player can tolerate moderate aerobic exercise, progress to step 3.			
3	Individual sport-specific activities, without risk of inadvertent head impact	○ Add sport-specific activities (e.g., running, changing direction, individual drills) ○ Perform activities individually and under supervision from a teacher, parent/caregiver or coach ○ Progress to where the player is free of concussion-related symptoms, even when exercising **Examples:** Warm up: • Dryland with the team • 200m freestyle without flip turns at each end of the pool • 3 minutes of eggbeater • 5 min of passing while facing a partner Cardiovascular: • Interval swim sets 3 x 5 x 25m progressive intensity up to 70% alt 25m 50% (375m total) 20 sec rest between sets Technical work:	Increase the intensity of aerobic activities and introduce low-risk sport-specific movements

		• 5 min of passing with 2 partners • 3 x 50m eggbeater with alternate side sliding • Make 10 shots at the net without opponents or goalie <u>Cool down:</u> • 100m freestyle @ 50% intensity • Foam rolling • Stretching **NO HEAD IMPACT ACTIVITIES**	
Medical clearance If the player has completed return to school (if applicable) and has been medically cleared, progress to step 4.			
4	Non-contact training drills and activities	○ Progress to exercises with no body contact at high intensity, including more challenging drills and activities (e.g., passing drills, multi-player training and practices) **Examples:** <u>Warm up:</u> • Dryland with the team (include 3 min of skipping rope) • 4 x 50m freestyle with diving start • 50m eggbeater • 50m breaststroke • 25m water polo backstroke + 25m eggbeater and vertical jumps • 5 x 10 sec breath hold with head underwater (alt 10 sec rest) <u>Cardiovascular:</u> • 5 x 25m catch-up: 60%-70%-80%-90%-100% (30 sec active rest throwing ball between reps) • 5 x 25m sprint head up (30 sec active rest throwing ball between reps)	Resume usual intensity of exercise, co-ordination and activity-related cognitive skills

		• 2 x 25m breaststroke • 5 x ½ pool sprints, spin and receive long pass + simulate post shot (return water polo backstroke easy) <u>Technical work:</u> • 3 min passing with 3 other players • 5 x 10 sec mirror drills with an opponent (alt 20 sec passive rest/set) • 10 x 5m sprint with the ball, fake and shoot on net with goalie and 1 defender • 10 x 2vs1 + goalie, receive pass and shoot on net <u>Cool down:</u> • 200m easy • Foam rolling • Stretching <u>Strength training:</u> • Keep resistance below 80% 1RM and avoid jumping • Olympic lifting or exercises where head is below the level of the hips (i.e. back extensions on a bench) • Progressively increase external resistance for multi-joint exercises **MAY START PROGRESSIVE RESISTANCE TRAINING**	
If the player can tolerate usual intensity of activities with no return of symptoms, progress to step 5.			
5	Return to all non-competitive activities, full-contact practice and physical education activities	• Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities • Do not participate in competitive gameplay	Return to activities that have a risk of falling or body contact, restore confidence and assess functional

		Examples: Warm up: • Dryland with the team • 100m freestyle with flip turns at the ends of the pool • 5 x (10m eggbeater + 6 turbo* + freestyle to finish pool) • Alternate 5 x (10m eggbeater + 4 consecutive jumps + freestyle to finish pool) • 5 min passing with 1 partner **Turbo: Fast/short/choppy strokes* Cardiovascular: • 5 x 25m catch-up: 60%-70%-80%-90%-100% (30 sec rest) • 5 x 25m all-out sprint with head up • 2 x 25m breaststroke • 5 x ½ pool sprints, receive pass and finish ½ pool easy with the ball (Rest 1 min) • 5 x ½ pool sprint, spin and receive long pass + simulate post shot (return water polo backstroke easy) • Active rest, passing with horizontal movement around block technique. Technical work: • 3 vs. 3 simulations in small surface • Progress to 6vs6 full size playing area Cool down: • 200m easy freestyle • Foam rolling • Stretching Strength training:	skills by coaching staff

		• Return to normal resistance loads, • Olympic lifting • Valsalva technique	
If the player can tolerate non-competitive, high-risk activities, progress to step 6.			
6	Return to sport	Unrestricted sport and physical activity	
Return to sport is complete.			

Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023

WATER POLO-Goalie-Specific Return-to-Sport Strategy

Step	Activity	Activity details	Goal of each step
1	Activities of daily living and relative rest (first 24 to 48 hours)	○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms ○ Minimize screen time	Gradual reintroduction of typical activities
After a maximum of 24 to 48 hours after injury, progress to step 2.			
2	2A: Light effort aerobic exercise	○ Start with light aerobic exercise*, such as stationary cycling and walking at a slow to medium pace ○ May begin light resistance training that does not result in more than mild and brief worsening of symptoms ○ Exercise up to approximately 55% of maximum heart rate ○ Take breaks and modify activities as needed **Note: Members of WPC's National Teams must consult the team physician prior to the commencement of Step 2A.*	Increase heart rate
	2B: Moderate effort aerobic exercise	○ Gradually increase tolerance and intensity of aerobic activities, such as stationary cycling and walking at a brisk pace	

		○ Exercise up to approximately 70% of maximum heart rate ○ Take breaks and modify activities as needed **Examples:** <u>Warm up:</u> • Stationary bike or inclined treadmill for 5 min @ 50% HR max <u>Exercises:</u> • Stationary bike for 20 min @ 70% HR max in interval sets • Tennis ball throws against neutral color wall: ○ 5 right hand throws with right hand catch ○ 5 left hand throws with left hand catch ○ 10 throws with alternate throwing and catching hands • Floor stretching routine: ○ Gluteals ○ Latissimus ○ Quadriceps ○ Hamstrings ○ Adductors ○ Butterfly stretch ○ Happy baby pose ○ Pigeon stretch • Foam roller on key areas: hips, back and shoulders • Mobility work for hip flexion, rotations, extension	
If the player can tolerate moderate aerobic exercise, progress to step 3.			
3	Individual sport-specific activities, without risk of inadvertent head impact	○ Add sport-specific activities (e.g., running, changing direction, individual drills)	Increase the intensity of aerobic activities and introduce low-risk sport-specific movements

		○ Perform activities individually and under supervision from a teacher, parent/caregiver or coach ○ Progress to where the player is free of concussion-related symptoms, even when exercising **Examples:** <u>Warm up:</u> • Dryland with the team • 200m freestyle without flip turns at the end of the pool • 3 minutes of eggbeater • 5 min of passes while facing partner <u>Cardiovascular:</u> • Interval swim sets 3 x 5 x 25m progressive intensity up to 70% alt 25m 50% (20 sec rest between sets) <u>Technical work:</u> • *In the pool* ○ Circuit training: 3x (5 sec eggbeater hands up, 6x lateral lunges alt sides, 10 sec crazy hands, 10 sec flutter kick against wall) ○ 5 min passes with 1 partner at increasing distance ○ 10 x 10sec of reaction drills with side to side or vertical jumping ○ 10x blocking lobed throws in free space (no net) • *Out of the water, tennis ball throws against a wall:* ○ 5 right hand throws with right hand catch ○ 5 left hand throws with	

		left hand catch ○ 10 throws with alternate throwing and catching hands *Goalie can also be challenged on land with passing and reaction drills with partner* <u>Cool down:</u> • 100m free @ 50% intensity • foam roller • stretching **NO HEAD IMPACT ACTIVITIES**	
Medical clearance If the player has completed return to school (if applicable) and has been medically cleared, progress to step 4.			
4	Non-contact training drills and activities	• Progress to exercises with no body contact at high intensity, including more challenging drills and activities (e.g., passing drills, multi-player training and practices) **Examples:** <u>Warm up:</u> • Dryland with the team (include skipping rope x 3 min) • 4 x 50m freestyle with diving start • 50m eggbeater • 50m breaststroke • 25m water polo backstroke + 25m eggbeater and vertical jumps • 5 x 10 sec breath hold with head underwater (alt 10 sec rest) <u>Cardiovascular:</u> • 4 x 6 Lunge and jump to the same side	Resume usual intensity of exercise, co-ordination and activity-related cognitive skills

		• 4 x 6 Lunge and jump to opposite side • 4 x 6 Jump and lunge to the same side • 4 x 6 Jump and lunge to the opposite side • Goalie position T-test* 3 x 5 x 5 with 30 sec rest between reps and 3 min between sets **T-Test: A test of sliding forwards then laterally in the shape of a T.* <u>Technical work:</u> • 5 min passing with 1 partner at increasing distances • 10 x blocking lobed shots vs. single attacker • 10 x top corner blocking (2 on 1 play or single attacker vs goalie) • 10 x blocking direct shots from various field player positions, left to right then right to left (2 on 1 play or single attacker vs goalie) • Reaction drills following ball movement 5 x 10 reps left/right/up *This is also an opportune period to practice decision making with match video situations and other volume dependant on visual and cognitive findings at Step 1* <u>Cool down:</u> • 200m easy • Foam rolling • Stretching <u>Strength training:</u> • Keep resistance below 80% 1RM and avoid jumping	

		• Olympic lifting or exercises where head is below the level of the hips (i.e. back extensions on a bench) • Progressively increase external resistance for multi-joint exercises **MAY START PROGRESSIVE RESISTANCE TRAINING**	
If the player can tolerate usual intensity of activities with no return of symptoms, progress to step 5.			
5	Return to all non-competitive activities, full-contact practice and physical education activities	○ Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities ○ Do not participate in competitive gameplay **Examples:** <u>Warm up:</u> *Continue to monitor heart rate throughout this period. Ensure return to adequate heart rate between longer sets or after very intense drills.* • Dryland with the team • 100m freestyle with flip turns at the ends of the pool • 3 x ½ distance vertical eggbeater sideways and switch to the end of the lap • 3 x ½ distance vertical eggbeater and slide horizontally every 5 seconds, finish freestyle • 3 x ½ distance vertical eggbeater and jump vertically with two hands every 5 seconds, finish freestyle • 5 min passing with partner face-to-face <u>Cardiovascular:</u>	Return to activities that have a risk of falling or body contact, restore confidence and assess functional skills by coaching staff

		• 4 x 6 Lunge and jump to the same side • 4 x 6 Lunge and jump to opposite side • 4 x 6 Jump and lunge to the same side • 4 x 6 Jump and lunge to the opposite side • Circuit training: 3x (5sec eggbeater hands up, 6x lateral lunging alt sides, 10 sec crazy arms*, 10sec flutter kick against the wall) **Crazy Arms: This exercise works on arm speed while static. Goalie raises both arms above their head and back down to the water as fast as they can. Arms should be raised from the side and not in front.* <u>Technical work:</u> • 5 mins passing with 1 partner at increasing distances • Practice game situations with ½ field or play (i.e. positions 1-2-3-6 only) • 2 x 10 blocking lobed shots random sides • 2 x 10 blocking straight top corner shots random sides • 2 x 10 blocking skipped shots random sides • 15 x blocking 2 on 1 situation, full net to cover <u>Cool down:</u> • 200m easy free • Foam rolling • Stretching <u>Strength training:</u> • Return to normal resistance loads	

		• Olympic lifting • Valsalva technique	
If the player can tolerate non-competitive, high-risk activities, progress to step 6.			
6	Return to sport	Unrestricted sport and physical activity	
Return to sport is complete.			

Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023

- **Who**: Medical doctor, nurse practitioner, and team athletic therapist or physiotherapist (where available)
- **How**: Return-to-School/Work Strategy, Water Polo-Specific Return-to Sport Strategy, Medical Clearance Letter

8. INTERDISCIPLINARY CONCUSSION CARE

Most players who sustain a concussion while participating in sport will make a complete recovery and be able to return to full school without any concussion-related accommodations and full sport participation without restrictions within four weeks of injury. However, approximately 15 to 30 per cent of individuals will experience symptoms that last longer beyond this time frame.

Players who experience persisting symptoms (longer than four weeks) may benefit from referral to specialized interdisciplinary concussion care for assessment and care that addresses the player's individual symptoms and needs.

Care of persisting symptoms should follow the management recommendations in Canada's clinical practice guidelines:

- Pediatric guidelines (children and youth under 18)
- Adult guidelines (18 and older)

- **Who:** Interdisciplinary medical team, medical doctor with clinical training and experience in concussion (e.g. a sports medicine physician, neurologist, or rehabilitation medicine physician), licensed healthcare professionals.

9. RETURN TO SPORT

Players who have been determined to have not sustained a concussion and provide a Medical Assessment Letter indicating they can return to school, work and sport activities without restriction.

Players who have been diagnosed with a concussion can be considered for medical clearance to return to sport activities with risk of contact or fall once they have successfully completed:

- all steps of the Return-to-School/Work Strategy (if applicable), and
- steps 1 to 3 of the Water Polo-Specific Return-to-Sport Strategy.

The final decision to medically clear a player to return to full game activity should be based on the clinical judgment of the medical doctor or nurse practitioner taking into account the player's past medical history, clinical history, physical examination findings and the results of other tests and clinical consultations where indicated (i.e. neuropsychological testing, diagnostic imaging).

To progress to step 4 of the Water Polo-Specific Return-to-Sport Strategy, each player that has been diagnosed with a concussion must provide their coach with a standardized Medical Clearance Letter that specifies that a medical doctor or nurse practitioner has personally evaluated the patient and has cleared the player to return to sports. In geographic regions of Canada with limited access to medical doctors (i.e. rural, remote or northern communities), a licensed healthcare professional (such as a nurse) with pre-arranged access to a medical doctor or nurse practitioner can provide this documentation.

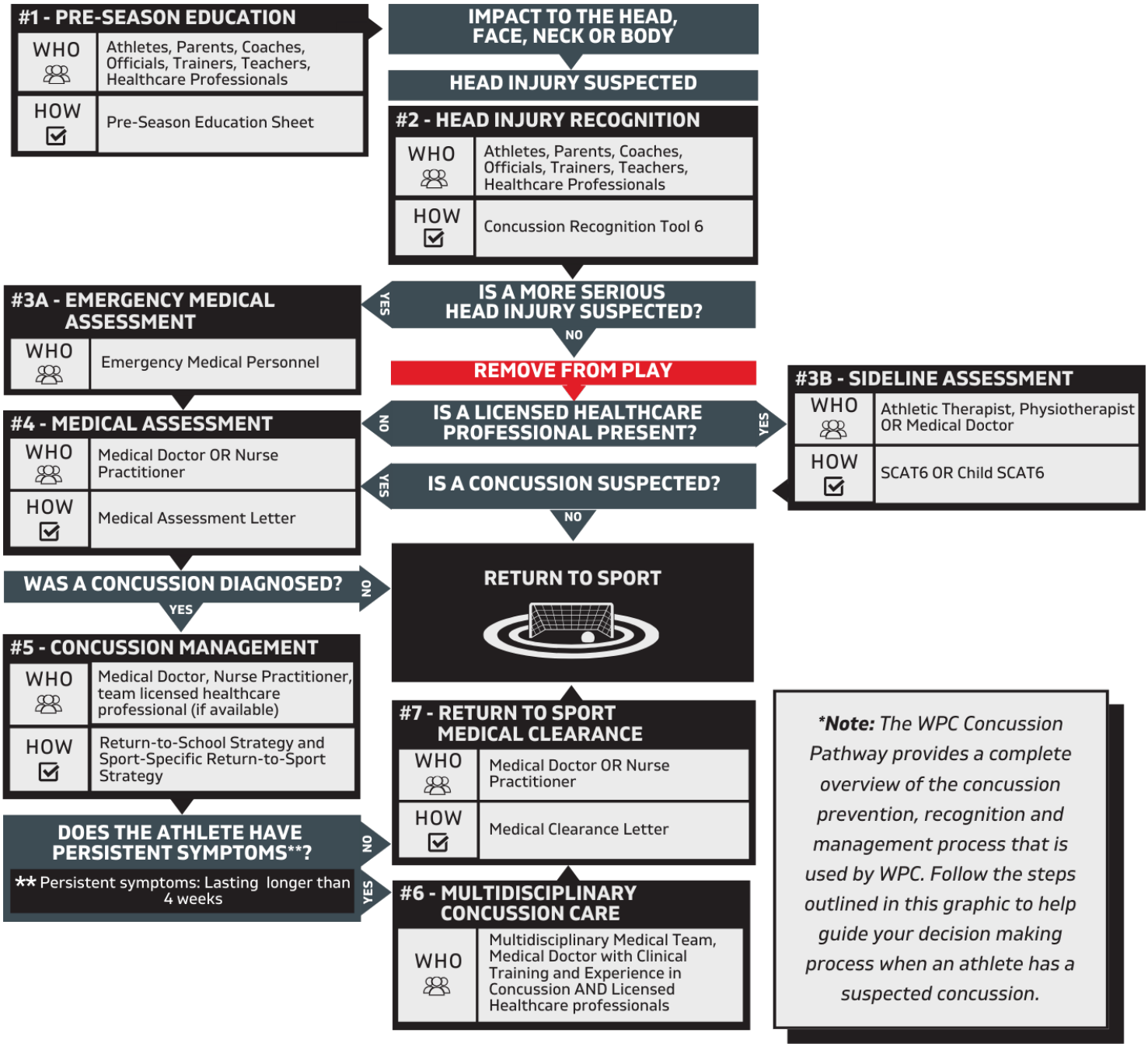
A copy of the Medical Clearance Letter should also be submitted to sports organization officials that have injury reporting and surveillance programs where applicable.

Players who have been provided with a Medical Clearance Letter may progress through steps 4, 5 and 6 of the Water Polo-Specific Return-to-Sport Strategy. If the player experiences any new concussion-like symptoms while returning to play, they should be instructed to stop playing immediately, notify their parents/caregivers (if they are a minor), coaches, trainer, teachers, or employer and return to step 3 to establish the full resolution of symptoms. Medical clearance is required again before progressing to step 4.

In the event that the player sustains a new suspected concussion, the WPC Concussion Protocol should be followed as outlined here.

- **Who**: Medical doctor, nurse practitioner
- **Document:** Medical Clearance Letter

10. WPC CONCUSSION PATHWAY



***Note:** The WPC Concussion Pathway provides a complete overview of the concussion prevention, recognition and management process that is used by WPC. Follow the steps outlined in this graphic to help guide your decision making process when an athlete has a suspected concussion.*

11. WPC CONCUSSION RESOURCES

11.1. WPC Concussion Education Toolkits

- For Coaches, Trainers & Safety Personnel
- For Players & Parents/Caregivers

11.2. Pre-Season WPC Concussion Resources

- Pre-Season Concussion Education Checklist
- Pre-Season Concussion Team Meeting Guide
- Pre-Season Concussion Education Fact Sheet

11.3. Water Polo Specific Concussion Resources

- Water Polo Return-to-Sport Strategy
- Return to School/Work Strategy
- WPC Concussion Pathway
- Tips to help prevent concussions and other injuries guide
- Concussion Action Plan Guide
- Concussion Frequently Asked Questions (FAQ) Guide
- Personal Concussion Record for Players

11.4. External Concussion Resources

- Concussion Recognition Tool 6 (CRT 6)
- Sport Concussion Assessment Tool 6 (SCAT 6)
- Child Sport Concussion Assessment Tool 6 (Child SCAT 6)
- Medical Assessment Letter
- Medical Clearance Letter