



## Water polo Canada Women's Concussion Return to Play protocol



For each of the steps mentioned below, athletes can progress to the following as long as they have had no return or increase of their symptoms for a period of 24 hours. These symptoms can include the following:

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| <ul style="list-style-type: none"> <li>- Headache</li> <li>- Pressure in the head</li> <li>- Neck pain</li> <li>- Nausea or vomiting</li> <li>- Dizziness</li> <li>- Blurry vision</li> <li>- Balance problems</li> <li>- Sensitivity to lights</li> <li>- Sensitivity to noise</li> <li>- Feeling slowed down</li> <li>- Feeling like "in a fog"</li> <li>- Sensitivity to noise</li> </ul> | <ul style="list-style-type: none"> <li>- Don't feel right</li> <li>- Difficulty concentrating</li> <li>- Difficulty remembering things</li> <li>- Fatigue or low energy</li> <li>- Confusion</li> <li>- Drowsiness</li> <li>- Trouble falling asleep</li> <li>- More emotional</li> <li>- More irritable</li> <li>- Sadness</li> <li>- Nervous or anxious</li> </ul> |
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If symptoms reappear, the athlete must wait until they have been symptom-free for 24 hours before moving on to the next step.

STEP 1 GOAL
Complete physical and intellectual rest for a minimum of 24 hours
PRECAUTIONS / LIMITATIONS
Cease any and all physical or intellectual activities that produce above symptoms

*If symptoms persist for one week, proceed to testing for the target heart rate (HR) at which symptoms increase. This can be done with an incremental walking inclined test to minimize head motions and local muscle fatigability. If symptoms do not persist, skip 1B.*

STEP 1B GOAL
Progressive return to physical activity below the HR threshold at which symptoms increase
PRECAUTIONS / LIMITATIONS
Cease all physical activities that produce symptoms
ACTIVATION
Incremental cardiovascular test with physical preparator to determine threshold where symptoms increase
EXERCICES
Interval cardiovascular program below threshold at which symptoms appear. Monitor HR and make sure it declines between each set to favor sympathetic/para-sympathetic balance
OTHERS
Clinical evaluation for visual deficits, dyskinesia, cervicogenic headaches, vestibular issues, etc...

Pursue the use of heart rate monitoring throughout the entire process to ensure HR decline between sets during training. Continue until step 6.

<b>STEP 2 GOAL</b>
Return to moderate intensity physical activities
<b>PRECAUTIONS / LIMITATIONS</b>
Avoid contact, especially to the head; avoid diving head first
<b>ACTIVATION</b>
Stationary bike or inclined treadmill for 5 min @ 50% HR max
<b>EXERCICES</b>
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... Foam roller on key areas: hips, back and shoulders Mobility work for hip flexion, rotations, extension
<b>OTHERS</b>
Follow-up as necessary for visual rehabilitation, manual therapy for cervical spine, etc...

<b>STEP 3 GOALS</b>
Return to physical activities of high intensity proper to the sport
<b>PRECAUTIONS / LIMITATIONS</b>
Avoid contact, especially to the head; avoid diving head first
<b>ACTIVATION</b>
Dryland with the team 200m freestyle without turns at the end of the pool 3 minutes eggbeater 5 min passes while facing partner
<b>CARDIOVASCULAR</b>
Interval swim sets 3 x 5 x 25m progressive intensity up to 70% alt 25m 50% (750m total) 20 sec rest between sets
<b>TECHNICAL WORK</b>
5 min passes with 2 partners 3 x 50m eggbeater with blocking motions 3 x 50m eggbeater with alternate side sliding 10 x shooting at the net without opponents and no goalie
<b>COOL DOWN</b>
100m free @ 50% intensity, foam roller and stretching
<b>STRENGTH AND CONDITIONNING</b>
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) Focus on single-joint pulley work with short isometric holds Progressively integrate multi-joint exercises with body weight resistance

<b>STEP 4 GOAL</b>
Progressive return to simple team drills without contact and increase resistance training with strength and conditioning
<b>PRECAUTIONS / LIMITATIONS</b>
Avoid contact with other players Avoid exposing athlete to hitting the head with the ball
<b>ACTIVATION</b>
Dryland with the team (include skipping rope x 3 min) 4 x diving into the pool with 50m freestyle 50m eggbeater 50m breastroke 25m water polo backstroke + 25m eggbeater and vertical jumps 5 times 10 sec breath hold with head underwater (alt 10 sec rest)
<b>CARDIOVASCULAR</b>
5 x catch up 25m head up: 60-70-80-90-100% (30 sec active rest throwing ball between reps) 5 x 25m sprints head up (30 sec active rest throwing ball between reps) 2 x 25m breastroke 5 x ½ pool sprints, spin and receive long pass + simulate post shot (return water polo backstroke easy)
<b>TECHNICAL WORK</b>
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 throw on net with goalie and 1 defender 10 x 2vs1 + goalie, receive pass and throw on net 3 x 10 blocking shots moderate intensity
<b>COOL DOWN</b>
200m easy + foam roller and stretching
<b>STRENGTH AND CONDITIONNING</b>
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

<b>STEP 5 GOAL</b>
Return to full drills with the teams, introduce contact with opponents, ramp up decision making complexity in game scenarios
<b>PRECAUTIONS / LIMITATIONS</b>
Minimise impacts to the head
<b>ACTIVATION</b>
Dryland with the team 100m free with turns at the ends of the pool 5 x (10m eggbeater + 6 turbo + free to finish pool) Alternate 5 x (10m eggbeater + 4 consecutive jumps + free to finish pool) 5 min passing with 1 partner
<b>CARDIOVASCULAR</b>
Catch up 25m head up: 60-70-80-90-100% (30 sec rest) 5 x all-out sprints with head up 2 x 25m breastroke 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 leaning as when avoiding a block
<b>TECHNICAL WORK</b>
2 x 5 reps 1vs1 battle to steal ball 5m away Passive rest 2 min 2 x 5 reps defensive block Passive rest 2 min 3vs3 simulations in small surface Progress to 6vs6 full size playing area
<b>COOL DOWN</b>
200m easy free, foam rolling and stretching
<b>STRENGTH AND CONDITIONING</b>
Return to normal resistance loads, olympic lifting and valsalva technique

<b>STEP 6 GOAL</b>
Full return to competition
<b>PRECAUTIONS / LIMITATIONS</b>
None