

# RETURN-TO-SPORT STRATEGY

This water polo specific Return-to-Sport Strategy was developed as part of Water Polo Canada's (WPC) Concussion Protocol by the Institut National du sport du Québec (INS Québec) in collaboration with WPC. It ensures that correct activities are completed at the appropriate stages of an athlete's return-to-sport journey and is an important tool for stakeholders. This tool is a recommendation and should not replace medical advice.

## Return-to-Sport Summary:

### 1 Follow the WPC Return-to-School/Work Strategy and Return-to-Sport Strategies

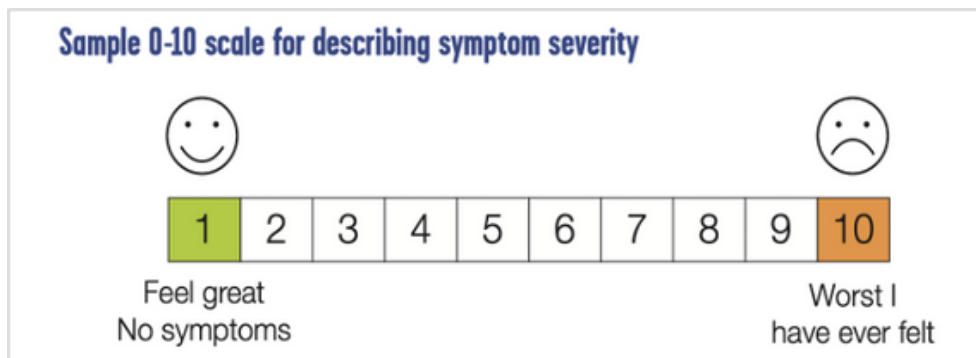
These strategies are designed to begin at the same time, happen concurrently and the first step of both is the same. Therefore, please review both strategies to understand the correct stage sequencing for a safe, stepwise return to school, work and sports after a concussion.

### 2 Progressing through the Strategies

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.



### **3 Return to Full Contact Sport Activities**

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.

The final decision to medically clear a player to return to a full-contact game or practice activity must 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 return to sport, 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 sport 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, trainers or teachers, and return to step 3 to establish the full resolution of symptoms. Medical clearance is required again before progressing to step 4.

Medical clearance is not required to return to school, except for full participation in school-based sport and physical activity. Return to sport and physical activity should be guided by the Return-to-Sport Strategy.

\*The Medical Clearance Letter can be found on the WPC website.

A visual representation of the WPC Concussion Pathway can be seen in Appendix A.

# RETURN-TO-SPORT STRATEGY - FIELD PLAYER

---

## STEP 1

**ACTIVITY:** Activities of daily living and relative rest (first 24 to 48 hours)

**ACTIVITY DETAILS:**

- 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

**GOAL OF THE STEP:** Gradual reintroduction of work/school activities

---

After a maximum of 24 to 48 hours after injury, progress to Step 2

---

## STEP 2

**ACTIVITY:**

**2A:** Light effort aerobic exercise

**2B:** Moderate effort aerobic exercise

**ACTIVITY DETAILS:**

**2A:**

- 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

**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

Warm -up:

- 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: 1) gluteals; 2) latissimus; 3) quadriceps; 4) hamstrings; 5) adductors; 6) butterfly stretch; 7) happy baby pose; 8) pigeon stretch, etc.
- Foam roller on key areas: hips, back and shoulders
- Mobility work for hip flexion, rotations and extension

**NO RESISTANCE TRAINING**

**GOAL OF THE STEP:** Increase heart rate

---

If the player can tolerate moderate exercise, progress to Step 3

### STEP 3

**ACTIVITY:** Individual sport-specific activities, without risk of inadvertent head impact

**ACTIVITY DETAILS:**

- 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

Warm -up:

- Dryland with the team
- 200m freestyle without flip turns at the end of the pool
- 3 min eggbeater
- 5 min passes while facing partner

Cardiovascular:

- Interval swim sets 3 x 5 x 25m progressive intensity up to 70% alt 25m @ 50% (750m total) with 20 sec rest between sets

Technical Work:

- 5 min passing 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

Cool Down:

- 100m freestyle @ 50% intensity, foam roller and stretching

**GOAL OF THE STEP:** Increase the intensity of aerobic activities and introduce low-risk sport specific movements

### Medical Clearance

If the player has completed return to school (if applicable) and has been medically cleared, progress to Step 4

## STEP 4

**ACTIVITY:** Non-contact training drills and activities

**ACTIVITY DETAILS:**

- 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)

Warm -up:

- Dryland with the team (include skipping rope for 3 min)
- 4 x diving into the pool with 50m freestyle
- 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)

Cardiovascular:

- 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 breaststroke
- 5 x 1/2 pool sprints, spin and receive long pass + simulate post shot (return water polo backstroke easy)

Technical Work:

- 3 min passing with 3 other players
- 5 x 10 sec mirror drills with an opponent (alternate 20 sec passive rest/set)
- 10 x 5m sprint with the ball, fake and throw on net with goalie and 1 defender
- 10 x 2 vs. 1 + goalie, receive pass and throw on net
- 3 x 10 blocking shots moderate intensity

Cool Down:

- 200m easy + foam roller and stretching

Strength Training:

- 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**

**GOAL OF THE STEP:** Resume usual intensity of exercise, coordination and activity-related cognitive skills

**If the player can tolerate usual intensity of activities with no return of symptoms, progress to Step 5**

## STEP 5

**ACTIVITY:** Return to all non-competitive activities, full-contact practice and physical education activities

**ACTIVITY DETAILS:**

- Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities
- Do not participate in competitive gameplay

Warm -up:

- Dryland with the team.
- 100m freestyle with turns at the ends of the pool
- 5 x 25m (10m eggbeater + 6 turbo + freestyle to finish pool)
- Alternate 5 x 25m (10m eggbeater + 4 consecutive jumps + freestyle to finish pool)
- 5 min passing with 1 partner

Cardiovascular:

- Catch up 25m head up: 60-70-80-90-100% (30 sec rest)
- 5 x 25m all-out sprints with head up
- 2 x 25m breaststroke
- 5 x 1/2 pool sprints, receive pass and finish 1/2 pool easy with the ball
- Rest 1 min
- 5 x 1/2 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

Technical Work:

- 2 x 5 reps 1 vs. 1 battle to steal ball 5m away
- Passive rest 2 min
- 2 x 5 reps defensive block
- Passive rest 2 min
- 3 vs. 3 simulations in small surface
- Progress to 6 vs. 6 full size playing area

Cool Down:

- 200m easy free, foam rolling and stretching

Strength Training:

- Return to normal resistance loads, Olympic lifting and Valsalva technique.

**GOAL OF THE STEP:** Return to activities that have a risk of falling or body contact, restore confidence and assess functional skills by coaching staff

If the player can tolerate non-competitive, high-risk activities, progress to Step 6

## STEP 6

**ACTIVITY:** Return to sport

**ACTIVITY DETAILS:** Unrestricted sport and physical activity

Return to sport is complete

# RETURN-TO-SPORT STRATEGY - GOALIE

## STEP 1

**ACTIVITY:** Activities of daily living and relative rest (first 24 to 48 hours)

**ACTIVITY DETAILS:**

- 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

**GOAL OF THE STEP:** Gradual reintroduction of typical activities

After a maximum of 24 to 48 hours after injury, progress to Step 2

## STEP 2

**ACTIVITY:**

**2A:** Light effort aerobic exercise

**2B:** Moderate effort aerobic exercise

**ACTIVITY DETAILS:**

**2A:**

- 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

**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

Warm -up:

- Stationary bike or inclined treadmill for 5 minutes @ 50% HR max.

Exercises:

- Stationary bike for 20 minutes @ 70 HR max in interval sets.
- Tennis ball throws against neutral coloured 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: 1) gluteals; 2) latissimus; 3) quadriceps; 4) hamstrings; 5) adductors; 6) butterfly stretch; 7) happy baby pose; 8) pigeon stretch, etc.
- Foam roller on key areas: hips, back and shoulders
- Mobility work for hip flexion, rotations, extension



## NO RESISTANCE TRAINING

**GOAL OF THE STEP:** Increase heart rate

If the player can tolerate moderate exercise, progress to Step 3

### STEP 3

**ACTIVITY:** Individual sport-specific activities, without risk of inadvertent head impact

**ACTIVITY DETAILS:**

- 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

Warm -up:

- Dryland with the team
- 200m freestyle without flip turns at the end of the pool
- 3 minutes eggbeater
- 5 minutes passes while facing partner

Cardiovascular:

- Interval swim sets 3 x 5 x 25m progressive intensity up to 70% alt 25m 50% (750m total) with 20 sec rest between sets

Technical Work (In the pool):

- Circuit training: 3 x (5 sec eggbeater hands up, 6 x lateral lunging alt sides, 10 sec crazy hands, 10 sec flutter kick against the wall)
- 5 min passing with 1 partner at increasing distance.
- 10-20 sec of reaction drills with side to side of vertical jumping
- 10 x blocking lobbed throws in free space (no net)

Technical Work (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



*The player can also be challenged on land with partner passing and reaction drills.*

Cool Down:

- 100m freestyle @ 50% intensity, foam roller and stretching

## NO HEAD IMPACT ACTIVITIES

**GOAL OF THE STEP:** Increase the intensity of aerobic activities and introduce low-risk sport-specific movements

## Medical Clearance

If the player has completed return to school (if applicable) and has been medically cleared, progress to Step 4

### STEP 4

**ACTIVITY:** Non-contact training drills and activities

**ACTIVITY DETAILS:**

- 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)

Warm -up:

- Dryland with the team (include skipping rope for 3 min)
- 4 x diving into the pool with 50m freestyle
- 50m eggbeater
- 50m breaststroke
- 25m water polo backstroke + 25m eggbeater and vertical jumps
- 5 x 10 sec hold with head underwater (alt 10 sec rest)

Cardiovascular:

- Lunge and jump to the same side 4 x 6
- Lunge and jump to the opposite side 4 x 6
- Jump and lunge to the same side 4 x 6
- Jump and lunge to the opposite side 4 x 6
- Goalie position T-test 3 x 5 x 5 with 30 sec rest between reps and 3 min between sets.

Technical Work:

- 5 min passing with 1 partner at increasing distances
- 10 x blocking lobbed 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 play 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 others, volume dependent on visual and cognitive findings at Step 1.*

Cool Down:

- 200m easy + foam roller and stretching

Strength Training:

- 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.**

**GOAL OF THE STEP:** Resume usual intensity of exercise, coordination and activity related cognitive skills

If the player can tolerate usual intensity of activities with no return of symptoms, progress to Step 5

## STEP 5

**ACTIVITY:** Return to all non-competitive activities, full-contact practice and physical education activities

**ACTIVITY DETAILS:**

- Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities
- Do not participate in competitive gameplay

Warm -up:

- Dryland with the team.
- 100m freestyle with regular turns at each end of the pool.
- 3x1/2 distance eggbeater sideways, switch at the end of the lap
- 3x1/2 distance eggbeater and slide every 5 sec., finish freestyle
- 3x1/2 distance eggbeater and jump every 5 sec., finish freestyle
- 5 min passing with partner face to face

Cardiovascular:

- Lunge and jump to the same side 4x6
- Lunge and jump to the opposite side 4x6
- Jump and lunge to the same side 4x6
- Jump and lunge to the opposite side 4x6
- Circuit training: 3x (5 sec eggbeater hands up, 6x lateral lunging alt sides, 10 sec crazy hands, 10 sec flutter kick against the wall).

\* Continue to monitor heart rate throughout this period. Ensure return to adequate heart rate between longer sets or after very intense drills.

Technical Work:

- 5 min passing with 1 partner at increasing distances
- Practice game situations with 1/2 field of play (i.e., positions 1-2-3-6 only).
- 2x10 blocking lobbed shots random sides
- 2x10 blocking straight top corner shots random sides
- 2x10 blocking skip shots random sides
- 15x blocking 2 on 1 situation, full net to cover.

Cool Down:

- 200m easy free, foam rolling and stretching

Strength Training:

- Return to normal resistance loads, Olympic lifting and Valsalva technique.

**GOAL OF THE STEP:** Return to activities that have a risk of falling or body contact, restore confidence and assess functional skills by coaching staff

If the player can tolerate non-competitive, high-risk activities, progress to Step 6

## STEP 6

**ACTIVITY:** Return to sport

**ACTIVITY DETAILS:** Unrestricted sport and physical activity

Return to sport is complete