



# Appendix H

Full Time training Group Sport Concussion Guidelines & Return-to-Sport Protocol



As a high-risk summer Olympic Sport, Canada Artistic Swimming must have an up-to-date sport concussion policy and protocol for all our full-time training group. A full-time training group is considered any training group that trains a minimum of 5 days a week and 4 hours per day as part of Canada Artistic Swimming National Team Programs and some Provincial Team Programs. Canada Artistic Swimming's Full-Time Training Group Sport Concussion Protocol covers the following information:

1. Education/ awareness
2. Code of Conduct
3. Pre-season Clinical Assessment
4. Removal from sport
5. Return-to-Sport

#### Education/ Awareness:

Coaches, athletes, medical staff must sign and submit to CAS the Pre-Season Concussion Education prior to commencing full-time training with the national team.

#### Code of Conduct:

Coaches must acknowledge and agree to abide by the CAS Conduct Policy annually

#### Pre-season Clinical Assessment (healthy, uninjured):

During the pre-season period and prior to the first day of national/ provincial team training camp, we ask that all artistic swimmers undergo:

Biographical information assessment, including a detailed past medical history such as previous concussion and neck injuries, description of recovery from previous concussions, neurological conditions, psychological / psychiatric conditions, other potential co-morbidities, medications, supplements, alcohol use, recreational drug use, etc.

Sport Concussion Assessment Tool (SCAT5)<sup>18</sup>, including gait and balance assessment (e.g., Balance Error Scoring System (BESS) / modified BESS)

Vestibular/Oculomotor Assessment (e.g., Visual Acuity, King-Devick<sup>19,28</sup>, Vestibular/Ocular Motor Screening (VOMS)<sup>20,29</sup>)

a. may also include formal oculomotor assessment by an optometrist / neuro- ophthalmologist and/or formal vestibular assessment by a qualified health care provider / otology / neurotology Ear, Nose and Throat (ENT) specialist in some cases pending concussion history

Web-based neurocognitive/neuropsychological assessment<sup>21</sup>(e.g., Immediate Post Concussion Assessment and Cognitive Test (ImPACT), CogState Sport, etc.) in a distraction-free environment



- a. it is recognized that web-based neurocognitive testing has cost implications, and should not take precedence over programmes to provide clinical care. In addition, neurocognitive test batteries need to be interpreted as part of a comprehensive, multi-faceted clinical evaluation, preferably by a neuropsychologist, when available<sup>26</sup>
- b. may also include formal neuropsychological testing conducted by a neuropsychologist (gold standard) in some cases depending on complexity of case or pre-existing comorbidities (e.g., psychological/psychiatric, history of multiple concussions, decisions regarding athlete retirement for the season or career).

All senior athletes entering full time training at INS will undergo pre-season clinical assessments completed under the supervision / guidance of the team physician on an annual basis at the time of COPSI Network Comprehensive Athlete Medical Intake<sup>22</sup> by a qualified health care professional (e.g., certified athletic therapist, physiotherapist, etc.) that is trained and experienced with the above sport concussion clinical assessments.

All athletes part of the 13-15 or Junior National program, will be required to complete a pre-season clinical assessments at one of the identified COPSI Networks across Canada. Canada Artistic Swimming will communicate directly with the selected athletes prior to each training camp for the appointments at the COPSI Network closest to them. If a COPSI Network clinic is not in the vicinity of the athlete's home, the athletes will complete their pre-season clinical assessment upon arriving at camp (this may require the athlete to arrive in advance of the first day of camp to complete).

Athletes should refrain from consuming any caffeinated beverages or engaging in strenuous exercise within four hours of baseline testing. It is also important that the athlete is tested in a well-fed and hydrated state, and should not be tested if there has been insufficient sleep or if the athlete has been under the influence of any drugs or alcohol in the 24-48 hour period prior to baseline assessment.

#### Concussion Recognition and Removal from Sport Participation for Medical Evaluation:

Recognition, diagnosis and timely clinical assessment of suspected concussions may help facilitate earlier recovery, reduce the risk of early complications and avoid further head and musculoskeletal injuries<sup>26</sup>. All sport stakeholders including athletes, parents, coaches, IST members, officials, volunteers, and licensed healthcare professionals are responsible for the recognition and reporting of athletes who may demonstrate visual signs of a head injury or who report concussion-related symptoms.

CAS *recommends* a COPSI Network team certified athletic therapist, physiotherapist, chiropractor or physician (hereafter referred to as "medical team") be onsite during practice/training and competition. This individual must be trained and experienced in assessment and management of acute sport-related concussion. If a concussion is suspected (e.g., significant impact to the head, face, neck, or body and demonstrates any of the visual signs/behaviors of a suspected concussion or reports any symptoms of a suspected concussion; [see Appendix A: Concussion Recognition Tool 5<sup>23</sup>](#)), the athlete **must** be removed from training / competition and evaluated immediately.

In the event of a fall, crash, head contact, or other impulsive force transmitted to the head:



1. The on-site COPSI network medical team, or assigned medical professional or coach if medical professional is not available, must follow the sideline assessment and CAS Removal-from-Sport Protocol.
2. The athlete must report to the medical team for assessment (or event physician if no member of the medical team is present).
3. The medical team should also seek out the athlete.
4. Coaches should report any suspicion of a concussion to the medical team or event physician (if no member of the medical team is present).
5. In the event that the suspected concussion is assessed by a COPSI Network team athletic therapist, physiotherapist or chiropractor, the team physician should also be notified (as soon as possible) to assist with management.
6. In the event that no members of the medical team are available, the athlete must be assessed by a physician as soon as possible. Athletes with a suspected concussion should be escorted by a teammate, coach or responsible adult to a physician. Subsequent follow-up should then be arranged with the team or consulting physician.
7. In the case where athletes are competing out-of-country, follow-up with the team physician may be conducted by telephone, internet, etc., where available. The team physician should also be contacted **PRIOR** to making travel arrangements to return home.
8. All athletes diagnosed with a sport-related concussion must be given the CAS Return-to-Sport Protocol and have the medical assessment signed by physician or nurse practitioner.
9. **Athletes CANNOT be cleared to return to training/competition by paramedical staff or team coaches.**
10. **Youth and Adult student-athletes return to full-time school activities and/ or cognitive activities before Stage 6 and 7.**

The athlete should not be left alone following the injury and serial monitoring for deterioration by the medical team is essential over the initial few hours following injury. Problems may arise over the first 24- 48 hours. We *recommend* that if the athlete experiences any of the following signs or symptoms (worsening headache, drowsiness or inability to be awakened, inability to recognize people or places, repeated vomiting, unusual behavior (confusion or irritable), seizures (arms and legs jerk uncontrollably), weakness or numbness in arms or legs, unsteadiness on their feet, slurred speech), they go to the nearest hospital emergency department immediately.

#### Acute Sport Concussion Assessment & Management:

##### **a) Sideline Assessment:**

##### Scenario 1: If a licensed healthcare professional is present

Standard emergency management principles must be adhered, with particular attention given to excluding a cervical spine injury, determining the disposition of athlete, and identifying any “Red Flags” listed in the **Concussion Recognition Tool 5 (Appendix A)**<sup>23</sup>. If an athlete is suspected of sustaining a more severe head or spine injury during a game or practice, an ambulance must be called immediately to transfer the patient to the nearest emergency department for further medical assessment.



If there is no concern for a more serious head / spine injury and after the first aid issues have been addressed, all suspected cases of concussion must be removed from the pool (or other location) and assessed by the medical team in a distraction-free environment where possible (i.e., medical room with only members of the medical team present). A formal concussion assessment must be completed using the SCAT5 and other clinical measures at the medical staff's discretion. If no medical team is onsite, the athlete must be assessed by a physician or nurse-practitioner.

A trained and experienced certified athletic therapist, physiotherapist or medical doctor providing medical coverage for the sporting event may make the determination that a concussion has not occurred based on the results of a multi-faceted, SCAT5-based sideline medical assessment. Athletes removed from sport with a suspected concussion and subsequently cleared to return to training or competition must undergo serial re-evaluations for up to 48 hours because of the possibility of delayed symptom onset<sup>26</sup>. If the athlete develops any delayed symptoms the athlete be removed from training or competition and undergo assessment by a medical doctor.

Because of the evolving nature of concussion in the acute phase, athletes suspected to have sustained a concussion after the acute sideline evaluation shall not return to practice or competition on the same day of injury, regardless of the resolution of concussion symptoms. If there is any doubt, sit them out!

Athlete will be placed on Canada Artistic Swimming FTTG Return-to-Sport Protocol. The athlete will be given a copy of his/ her protocol that they must have with them at all times. The IST staff will ensure the athlete electronic file is keep current with the athletes most recent information.

### Scenario 2: If there is no licensed healthcare professional present

The athlete should be referred immediately for medical assessment by a medical doctor or nurse practitioner, and the athlete must not return to play until receiving medical clearance.

- ▶ Most provincial team training and competition, and some training days for National teams may encounter scenario 2.
- ▶ As such, Canada Artistic Swimming requests all provincial and national teams programs to print and use CAS Removal-from-Sport Protocol - see Appendix D, and the Full-Time Training Group Return-to-Sport Protocol

## **b) Clinic Assessment & Management**

### **Clinic Assessment**

- Concussion is a clinical diagnosis with the aid of the following:
  - Comprehensive clinical history, including mechanism of injury and previous injury history, and detailed neurological examination as soon as possible following the injury by the team physician (if possible) or a physician experienced with sport concussion



- includes thorough assessment of mental status, cognitive functioning, coordination, gross sensorimotor, sleep/wake disturbance, oculomotor function, cervical assessment, vestibular function, gait and balance *Stage 6*
- may include formal optometrist / ophthalmologist / vestibular physiotherapist assessment in some cases *Stage 6*
- web-based cognitive/neuropsychological testing should only be administered when the athlete is free of concussion-related symptoms *Stage 6*
  - computerised neurocognitive test batteries should not be used as the sole criterion for return to sport decision-making
  - neurocognitive test batteries need to be interpreted as part of a comprehensive clinical evaluation, preferably by a neuropsychologist, when available
  - if a specialist neuropsychologist is not available, supervised computerised testing batteries and additional expert clinical opinion should be employed for concussed athletes who return to sport in fewer than 7 days<sup>26</sup>
  - formal neuropsychological testing conducted by a neuropsychologist should be considered in complex cases where there are decisions regarding athlete retirement for the season or career<sup>26</sup>.

## Management

If a concussion is formally diagnosed, both physical and cognitive rest is advised for the initial **24 - 48 hours** post-concussion

- eases discomfort / symptoms during the acute recovery period
- promotes recovery by minimizing brain energy demands
- physical and cognitive rest may include:
  - no resistance training / weight lifting, sport-specific training, cross training, cardiovascular conditioning, intense exertion associated with activities of daily living, etc.
  - no excessive mental tasks including driving, studying, reading, social media streaming, etc.
  - quiet environments
  - minimize exposure to visual and auditory stimulation (computer use, television, texting, video games, night clubs, etc.)
  - removal from potential stressful situations (media attention, interviews, team meetings, etc.)
- other aspects of acute concussion management that are important to consider include:
  - avoiding alcohol or recreational drug use
  - maintain regularly scheduled fluid intake (hydration), meals and snacking (well- balanced)
  - avoiding sleeping pills (e.g., imovane, restoril, xanax, halcion, etc.), anti-inflammatory medication (e.g., aspirin, ibuprofen, aleve, etc.), narcotics and other analgesics within the



first 24–48 hours of concussion, and only use thereafter based on physician recommendations.

**After 24 – 48 hours** of relative rest, athletes can be encouraged to become gradually and progressively more active while staying below their cognitive and physical symptom-exacerbation thresholds (i.e., physical or cognitive activity should not bring on new or worsen existing symptoms) *Stage 6*

- Brief napping (<25 minutes) is appropriate if needed, but avoid excessive daytime sleep
- Initiate rehabilitation, if warranted, based on the physician’s clinical assessment and recommendations (i.e., cervical, vestibular, oculomotor, etc.)
- It is *recommended* that the athlete progresses through Canada Artistic Swimming FTTG RTS – gradual exertional strategy – before progressing to stage 6 and 7 of the Return-to-Sport Protocol.
  - each athlete’s concussion will be managed on an **individualized basis** based on the physician’s clinical judgment.

When the athlete is determined by the medical team to be free of concussion-related symptoms at rest and with exertion, it is recommended the athlete repeat the web-based cognitive/neuropsychological test for post-injury evaluation (if resources available).

- Although neuropsychological test data are useful in assessing the neurocognitive sequelae of concussion, they should not be used in isolation to make the diagnosis of concussion or as the sole determinant for return to high-risk training or sport.

### **c) Return to Sport (Unrestricted Training and/or Competition)**

Recent evidence has demonstrated that the window for physiological recovery typically outlasts symptom recovery<sup>1,2</sup>. There is also evidence to suggest that the risk of musculoskeletal injury is significantly higher for athletes sustaining a sport-related concussion in the subsequent three, six and 12 months following their concussive injury<sup>1,3-12</sup>. One hypothesis to explain this finding is that athletes may be returning to unrestricted competition prematurely, before they have physiologically recovered from their concussive injury<sup>1-3,13,14</sup>.

If the athlete’s post-concussion clinical assessments are within baseline normative (healthy, uninjured) levels in all testing domains (as per judged by the consulting physician), the risks associated with return to high-risk sport will be discussed with the athlete, with prevention / risk reduction strategies. As an additional measure of the informed consent process, the athlete will then sign an informed consent letter acknowledging that they were explained the risks, their questions (if any) were answered, and that they willingly accept that risk upon return to high-risk sport training and competition ([Athlete Informed Consent Acknowledgement Letter, Appendix I](#)).

We *recommend* athletes return to unrestricted training and competition only after the following circumstances have occurred:

- (1) there is complete resolution of concussion-related symptoms at rest,



(2) there is no recurrence of concussion-related symptoms at exertion levels required for unrestricted practice and competition,

(3) the athlete's post-concussion clinical and neuropsychological status has returned to individual baseline levels as judged by the team physician, and the team's consulting neuropsychologist (if resources available and/or part of comprehensive concussion program).

There is no mandatory period of time that an athlete must be withheld from play following a concussion, as the return to play decision is based on the individual circumstances of that athlete and team physician's professional judgment.

The team physician remains solely responsible for making return to play decisions based on these parameters, including in circumstances where the athlete is referred to a consulting physician with experience in sport-related concussion for assessment and management. Athletes may require a 3<sup>rd</sup> party independent assessment in cases where the athlete suffers persistent symptoms, including persistent symptom recurrence with exertion, or athletes who suffer multiple concussions over time or where repeat concussions occur with progressively less impact force. Prior to making the return to high-risk sport decision, the team physician shall ensure that all aspects of the above protocol have been satisfied.

#### **d) Persistent Symptoms**

- Approximately 15-30% of patients will experience persistent symptoms (> 2 weeks for adults or > 4 weeks for athletes < 18 years)<sup>5</sup>
- Typically reflects failure of normal clinical recovery
- Typically, does not reflect a single pathophysiological entity, but describes a constellation of non-specific post-traumatic symptoms that may be linked to coexisting and/or confounding factors, which do not necessarily reflect ongoing physiological injury to the brain
- Requires detailed multi-disciplinary clinical assessment under the direction of a physician experienced in concussion management to identify specific primary and secondary pathologies that may be contributing to persisting concussion-like symptoms, which may include:
  - formal cervical (i.e., neck) assessment by an experienced licensed health care professional
  - formal vestibular assessment by an experienced vestibular therapist or otology/neurotology Ear, Nose and Throat (ENT) physician experienced in sport concussion
  - formal oculomotor (i.e., visual/gaze control) assessment by an optometrist / neuro-ophthalmologist specialist experienced in sport concussion
  - formal physiology assessment of autonomic nervous system instability / dysfunction by an exercise physiologist experienced in sport concussion
  - formal mental health assessment by an experienced sport psychologist, registered psychologist, neuropsychologist or psychiatrist experienced in sport concussion
  - formal assessment by a psychiatrist or neurologist experienced in sport concussion





- We suggest treatment be individualized and targeted to specific medical, physical and psychosocial factors identified on multi-disciplinary assessments
- In cases where the athlete suffers persistent symptoms, including persistent symptom recurrence with exertion, or specific sequelae (e.g., concussive convulsions, prolonged loss of consciousness or cognitive impairment following the injury), a more conservative management approach may be warranted based on the consulting physician's clinical judgment. This group may also include athletes who suffer multiple concussions over time or where repeat concussions occur with progressively less impact force.



For FULL-TIME TRAINING GROUP Return to Sport Protocol  
Revised March 2019

A **FULL-TIME TRAINING GROUP** is any artistic swimming training in a daily training environment:

13-15/ Junior/ Senior National team training/ camp/ competition  
Provincial team training/ camp/ competition

\* If a concussion is suspected, remove the athlete immediately from the pool.  
Refer to your licensed healthcare professional for complete concussion evaluation and treatment as required.\*

Name of athlete: \_\_\_\_\_

Date of incident: \_\_\_\_\_

Date first medical consultation: \_\_\_\_\_

Date SCAT5 completed: \_\_\_\_\_

Diagnosis: \_\_\_\_\_

Completed by: \_\_\_\_\_

Parents communicated (if athlete under 18 years of age): \_\_\_\_\_



# Stage 1

**FILL IN THE POST-CONCUSSION SYMPTOMS SCALE** (see annex A) at the start of each day and consult with your health care professional to discuss the results and to decide whether to continue with rest, redo the same stage or proceed to the next stage.

Date:	Symptom Score Total (annex A)	Medical Consultation (name the professional)	Supervisor's Initials*

\*supervisor (therapist, team manager, coach, other specify\_\_\_\_\_)

Objectives of this stage:	Contra-indications/limitations:
The athlete should rest physically and cognitively for <b>24-72</b> hours.	Physical and cognitive activity (computer, watching TV, noise, etc.)

In most cases, after a few days of rest, the athlete can gradually increase their daily activity level as long as symptoms do not get worse. Once they are able to do their normal daily activities (driving, reading, cooking, hygiene, etc) without symptoms getting worse, the athlete can gradually increase physical activity/ training in steps, guided by a health care professional.

If the athletes signs or symptoms (see list below) worsen during daily activities, they do not return to sport training.

- |                               |                           |                                   |                  |                      |
|-------------------------------|---------------------------|-----------------------------------|------------------|----------------------|
| Dizziness                     | Headaches                 | Nausea/vomiting                   | Fatigue          | Irritability         |
| Sleepiness/feeling in a cloud | Trouble with memory       | Trouble with balance              | Sadness          | Numbness             |
| Concentration                 | More emotional than usual | Sensitivity to light and/or noise | Trouble sleeping | Anxiety/ Nervousness |

**\*If any signs or symptoms worsen, continue with physical and cognitive for at least another 24 hours, or until signs and symptoms return to tolerable.**

ATHLETE COMPLETES STAGE 1 – DATE: \_\_\_\_\_

Medical Assessment Letter signed & received



## Stage 2

Stage 2 start date: \_\_\_\_\_

FILL IN THE POST-CONCUSSION SYMPTOMS SCALE (see annex A), at the start of each day and consult with your health care professional to discuss the results and to decide whether to continue with rest, redo the same stage or proceed to the next stage.

Date:	Symptom Score Total (annex A)	Medical Consultation (name the professional)	Supervisor's Initials*

\*supervisor (therapist, team manager, other specify \_\_\_\_\_)

Objectives of this stage:	Contra-indications/limitations:
Return to light physical activity out of the pool in quiet environment (not on pool deck with music playing).	Headache or worsening of any sign or symptom (2 or higher on the post-concussion evaluation scale). <ul style="list-style-type: none"> <li>➔ No intense aerobics, plyometrics, heavy lifting or spinning, etc.</li> <li>➔ No trampoline</li> <li>➔ No contacts</li> <li>➔ No pool</li> <li>➔ No apnea</li> <li>➔ No head down</li> </ul>



COMMENTS: Please note that the stages 2-8 are samples of progressions that can be used

Exercises	Date:					Comment from athlete and/or supervisor	Supervisor initials
<input type="checkbox"/> Walk (progressive: 5 to 20 min 50-60%FCmax or 65% V02max)							
<input type="checkbox"/> Stationary bike (progressive: 5 to 20 min 50-60%FCmax or 65% V02max)							
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop, consult & go home <input type="checkbox"/> No = stage 3 with medical approval tomorrow							
<input type="checkbox"/> Return to rest at home!							

ATHLETE COMPLETES STAGE 2 - DATE: \_\_\_\_\_

\*\*\* and can move to stage 3 after 24 hrs has passed \*\*\*



## Stage 3

Stage 3 start date: \_\_\_\_\_

FILL IN THE POST-CONCUSSION SYMPTOMS SCALE (see annex A), at the start of each day and consult with your health care professional to discuss the results and to decide whether to continue with rest, redo the same stage or proceed to the next stage.

Date:	Symptom Score Total (annex A)	Medical Consultation (name the professional)	Supervisor's Initials*

\*supervisor (therapist, team manager, other specify\_\_\_\_\_)

Objectives of this stage:	Contra-indications/limitations:
<ul style="list-style-type: none"> <li>• Progressive return to physical activity and cognitive activity</li> <li>• Keep athlete at pool no more than 2 hours</li> <li>• Light to moderate intensity out of the pool:               <ul style="list-style-type: none"> <li>○ Mild aerobic + check % of perceived effort</li> <li>○ Arm movements out of pool (land drill) sitting</li> </ul> </li> <li>• Return in pool (LIGHT swimming and «eggbeater»)</li> </ul>	<p>Headache or worsening or return of any sign or symptom (2 or higher on the post-concussion evaluation scale).</p> <ul style="list-style-type: none"> <li>➔ No resistance training in weight room, spinning or sprints</li> <li>➔ No trampoline</li> <li>➔ No diving</li> <li>➔ No contacts (No swimming in patterns)</li> <li>➔ No apnea</li> <li>➔ No head down (underwater)</li> </ul>



Exercises	Date:							Comment from athlete and/or supervisor	Supervisor initials
<input type="checkbox"/> Activation with team (no headstands) & Stationary Bike 10' (60-75%HRmax)									
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop, consult & go home <input type="checkbox"/> No = continue transition to pool 35'									
<input type="checkbox"/> Light swimming with no apnea (50-60%HRmax) 10-15'									
<input type="checkbox"/> «Egg beater» 15\ 30 sec on/30 sec off 2x 5' Intervals (add arm mvts) 5' rest between sets									
<input type="checkbox"/> Cool Down 5' Swim very low intensity									
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop, consult & go home <input type="checkbox"/> No = continue									
<input type="checkbox"/> Light flexibility 20' (2 x30 seconds)									
<input type="checkbox"/> «Land drill» 15' sitting									
<input type="checkbox"/> Visualize video and/or correct teammates - 15' x 2									
<input type="checkbox"/> Break									
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop, consult & go home <input type="checkbox"/> No = stage 4 with medical approval tomorrow									
<input type="checkbox"/> Return to rest at home!									

\*If any signs or symptoms worsen or return, STOP TRAINING IMMEDIATELY, continue with complete rest for at least another 24 hours. Consult with your health care professional before proceeding to next stage.\*

ATHLETE COMPLETES STAGE 3 - DATE: \_\_\_\_\_

\*\*\* and can move to stage 4 after 24 hrs has passed \*\*\*



## Stage 4

Stage 4 start date: \_\_\_\_\_

FILL IN THE POST-CONCUSSION SYMPTOMS SCALE (see annex A), at the start of each day and consult with your health care professional to discuss the results and to decide whether to continue with rest, redo the same stage or proceed to the next stage.

Date:	Symptom Score Total (annex A)	Medical Consultation (name the professional)	Supervisor's Initials*

\*supervisor (therapist, team manager, other specify \_\_\_\_\_)

Objectives of this stage:	Contra-indications/limitations:
<ul style="list-style-type: none"> <li>Progressive return to physical and cognitive activity at moderate to high intensity out of the pool+</li> <li>Return to aerobics and plyometrics moderate + check % of perceived effort</li> <li>Return to weight training and cardio at high intensity + check % of perceived effort</li> <li>If all goes well, return to basic swimming elements at light to moderate intensity</li> </ul>	<p>Headache or return of any sign or symptom (2 or higher on the post-concussion evaluation scale).</p> <p>No trampoline</p> <p>No contacts = stay out of pattern</p>





Exercises	Date:						Comment from athlete and/or supervisor	Supervisor initials
<input type="checkbox"/> Progressive active on bike 5' and activation with team 20'								
Stabilisation Exercises (core) 20' eccentric, with control, increase resistance and intensity, 2x10reps/30 sec between each set – ENSURE ATHLETE IS NOT BREATH HOLDING								
<input type="checkbox"/> Push-ups	<input type="checkbox"/> Abdominals	<input type="checkbox"/> Deep squats						
<input type="checkbox"/> Heel raises unipodal	<input type="checkbox"/> Alternating arms/legs on all fours/on Swiss ball							
Light Tubing 20' (arm/shoulders) 10 reps/60 secs rest between each set								
<input type="checkbox"/> Quadrants	<input type="checkbox"/> Push-forward	<input type="checkbox"/> Pull-back						
<input type="checkbox"/> Shoulder press	<input type="checkbox"/> ER\IR @90 Abd							
Proprioception on ground 15', 2x30 seconds, 15 seconds between each progression:								
<input type="checkbox"/> 2 legs eyes open	<input type="checkbox"/> Tandem walk	<input type="checkbox"/> Squat jump 2 legs						
<input type="checkbox"/> Eyes closed	<input type="checkbox"/> On cushion, theraband then unipodal	<input type="checkbox"/> 1 leg and on a box						
<input type="checkbox"/> Transition								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> Progressive activation with the team swimming 30' (no head down no apnea)								
<input type="checkbox"/> Synchro elements/ not in pattern, no head down, 40' (50-75%)								
<input type="checkbox"/> Rest 5'								
<input type="checkbox"/> Head underwater in apnea, w/o effort 2x10 head underwater: 10" out of water 60" rest between each series								
<input type="checkbox"/> Flexibility in water 10'								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> Landrill 20' standing								
<input type="checkbox"/> Visualize video and/or correct teammates								
<input type="checkbox"/> Break								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> Weight training (50-75%)								
<input type="checkbox"/> Video and/or correct teammates								



Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue							
<input type="checkbox"/> Visualize video and/or correct teammates							
<input type="checkbox"/> Meet with supervisor 15' discuss synchro elements and performance during the day, discuss objectives for the next day							
<input type="checkbox"/> Return to rest at home!							

\*If any signs or symptoms worsen or return, STOP TRAINING IMMEDIATELY, continue with complete rest for at least another 24 hours. Consult with your health care professional before proceeding to next stage.\*

Comments

For gym work: stay at 60-75% of Repetition Max. or less, avoiding jumps, heavy weight lifting and exercises in an inclined or declined position or with head below hips (ex : back extension on bench). If no signs or symptoms, may add more complex exercises per session and slowly begin re-integrating jumps and other plyometrics as well as skipping rope as activation.

«Land drill»: The athlete must be able to follow the timings/counts and be synchronized with other teammates.

ATHLETE COMPLETES STAGE 4 - DATE: \_\_\_\_\_

\*\*\* and can move to stage 5 after 24 hrs has passed \*\*\*



## Stage 5

Stage 5 start date: \_\_\_\_\_

FILL IN THE POST-CONCUSSION SYMPTOMS SCALE (see annex A), at the start of each day and consult with your health care professional to discuss the results and to decide whether to continue with rest, redo the same stage or proceed to the next stage.

Date:	Symptom Score Total (annex A)	Medical Consultation (name the professional)	Supervisor's Initials*

\*supervisor (therapist, team manager, other specify \_\_\_\_\_)

Objectives of this stage:	Contra-indications/limitations:
<ul style="list-style-type: none"> <li>Progressive return to physical and cognitive activity at high intensity out of the pool</li> <li>Return to normal weight training, plyometrics and cardio + check % of perceived effort.</li> <li>If all goes well, return to apnea with head under water and basic swimming elements at moderate intensity (increase speed of execution progressively)</li> </ul>	<p>Headache or return of any sign or symptom (2 or higher on the post-concussion evaluation scale).</p> <p>No trampoline</p> <p>Avoid contact with teammates (STAY OUT OF PATTERN)</p>



Exercises and training as per usual	Date:						Comment from athlete and/or supervisor	Supervisor initials
<input type="checkbox"/> Progressive activation bike 5' and activation with team 20'								
<input type="checkbox"/> Transition								
<input type="checkbox"/> Head under water with harness or gym bars or 'figure trainer' 3 x 5 under :10" rest, : 60" rest between each series								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> Progressive activation in the water 30', includes flex, apnea, head down								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> «Fish» position 3 x 5 under:10" rest 60" between series								
<input type="checkbox"/> Synchro elements out of pattern 50' (50-75%) progress with music								
<input type="checkbox"/> Test 400m swim (75%)								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> Swimming 30' (70-90%) include 4x lengths in apnea								
<input type="checkbox"/> Barracuda» Head under, with physical effort 3x 5 : under 10", 60" rest between each series								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								
<input type="checkbox"/> Land drill 30', lengths /parts not all the way through								
<input type="checkbox"/> Break								
<input type="checkbox"/> Weight training (80-90%)								
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue								



<input type="checkbox"/> Meet with supervisor 15' discuss synchro elements and performance during the day, discuss objectives for the next day							
<input type="checkbox"/> Return to rest at home!							

\*If any signs or symptoms worsen or return, STOP TRAINING IMMEDIATELY, continue with complete rest for at least another 24 hours. Consult with your health care professional before proceeding to next stage.\*

**Youth and Adult student-athletes returned to full-time school activities or cognitive activities**

ATHLETE COMPLETES STAGE 5 - DATE: \_\_\_\_\_

\*\*\* and can move to stage 6 after 24 hrs has passed \*\*\*



## Stage 6

Stage 6 start date: \_\_\_\_\_

FILL IN THE POST-CONCUSSION SYMPTOMS SCALE (see annex A), at the start of each day and consult with your health care professional to discuss the results and to decide whether to continue with rest, redo the same stage or proceed to the next stage.

Date:	Symptom Score Total (annex A)	Medical Consultation (name the professional)	Supervisor's Initials*

\*supervisor (therapist, team manager, other specify \_\_\_\_\_)

Objectives of this stage:	Contra-indications/limitations:
<ul style="list-style-type: none"> <li>Progressive return to physical and cognitive activity at maximal intensity out of the pool</li> <li>Return to Normal weight training and cardio + check % perceived effort</li> <li>Progressive return to basic elements on the trampoline</li> <li>If all goes well, return to basic swimming elements at moderate to high intensity</li> <li>Integrate technical synchro work with 2 to 3 teammates to regain points of reference in the water (STAY OUT OF PATTERN, duet and smaller groups ok)</li> <li>Trial of diving (contact with water) and acrobatics or jumps</li> <li>Trial of pool work with music, from parts to full routine</li> </ul>	<p>Headache or return of any sign or symptom (2 or higher on the post-concussion evaluation scale).</p> <p>Stay out of pattern</p>



Exercises and training as per usual	Date:					Comment from athlete and/or supervisor	Supervisor initials
<input type="checkbox"/> Regular Activation out of pool with team							
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue							
<input type="checkbox"/> Activation in water with team 30'							
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue							
<input type="checkbox"/> Elements 30'							
<input type="checkbox"/> Parts/lengths 75' out of pattern (with iPod to follow music)							
<input type="checkbox"/> 5 front dives and 5 back dives for entry to water							
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue							
<input type="checkbox"/> Execute technical elements with 2-3 teammates							
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue							
<input type="checkbox"/> Normal training out of pattern and/or solo/duet +land drill/video with team + weight training with team							
<input type="checkbox"/> Meet with supervisor 15' discuss synchro elements and performance during the day, discuss objectives for the next day							
<input type="checkbox"/> Return to rest at home!							

\*If any signs or symptoms worsen or return, STOP TRAINING IMMEDIATELY, continue with complete rest for at least another 24 hours. Consult with your health care professional before proceeding to next stage.\*

Comments

Validate if athlete can adjust to teammates around her and execute at required speed and intensity as well as be synchronized with her teammates.

Aerials: add acrobatic elements to create contact with water



ALL CONCUSSION SYMPTOMS ARE 100% ABSENT  
ATHLETE COMPLETES STAGE 6 - DATE: \_\_\_\_\_  
\*\*\* and can move to stage 7 after 24 hrs has passed \*\*\*

Medical Clearance Letter signed & received





## Stage 7

Date: \_\_\_\_\_

Objectives of this stage:	Contra-indications/limitations:
<ul style="list-style-type: none"> <li>Re-integrate Training and Competition as per usual</li> </ul>	Any return of Signs and / or Symptoms

Exercises and training as per usual	Comment from athlete and/or supervisor	Supervisor initials
<input type="checkbox"/> Re-integrate Gym and all normal out of pool activities		
<input type="checkbox"/> Re-integrate Pool and all normal in-pool activities in pattern		
Q: Verify all signs and symptoms any changes? <input type="checkbox"/> Yes = stop and consult <input type="checkbox"/> No = continue		
<input type="checkbox"/> Meet with supervisor 15' discuss synchro elements and performance during the day, discuss objectives for the next day		

Comments

Full solo and duet

Return to team routines progressively one a day, out of pattern until complete reintegration of all routines

Athlete Informed Consent Acknowledgement Letter signed & received



KEEP AN EYE ON THE ATHLETE FOR AT LEAST ANOTHER WEEK TO ENSURE THAT NO SIGNS OR SYMPTOMS RETURN DURING TRAINING. Should any return, remove immediately from training, rest for 24 hours and consult with team physician before re-integrating training.

File Closed by: \_\_\_\_\_

Date: \_\_\_\_\_

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature of treating health care professional: \_\_\_\_\_



# ANNEX A

Name of athlete: \_\_\_\_\_  
 Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

## POST CONCUSSION SYMPTOMS EVALUATION SCORE

Fill in at the start of each day and consult with appropriate medical personnel BEFORE each stage.

Ask athlete to note the severity of their symptoms using a 0-6 severity scale.

Nothing = 0      Light: 1-2      Moderate = 3-4      Severe = 5-6

Symptoms	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Date										
Headaches										
"Pressure un head"										
Neck pain										
Nausea/ vomiting										
Dizziness										
Blurred Vision										
Trouble with balance										
Sensitivity to light										
Sensitivity to noise										
Feeling slowed down										
Feeling like "in a fog" / in a cloud										
"Don't feel right"										
Difficulty concentrating										
Difficulty remembering / Trouble with memory										
Fatigue or low energy / sleep more then usual										
Confusion										
Drowsiness / sleepiness										
More emotional										
Irritability										
Sadness										
Nervousness or Anxious										
Trouble falling asleep / with sleep										
Other (specify) _____										



Do these signs/symptoms get worse with physical activity (change in positions, lifting bag, walking, etc.)?

Yes / No

Do these signs/symptoms get worse with cognitive activity (reading, TV, computer, studying, etc.)?

Yes / No

The athlete must be symptom free for 24 hours before attempting to proceed to the next stage of the protocol. Furthermore, they must obtain medical approval to pass from one stage to the next.

\*If any signs or symptoms return or persist, STOP, continue with complete rest for at least another 24 hours.



