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# Volleyball Alberta Concussion Protocol

Volleyball Alberta has developed our **Concussion Protocol** to help guide the management of athletes who may have a suspected concussion as a result of participation in Volleyball Alberta activities. This Protocol was adapted from *Parachute. (2017). Canadian Guideline on Concussion in Sport. [www.parachute.ca/concussion](http://www.parachute.ca/concussion) (section 2 has been added).*

**Purpose:** This protocol covers the recognition, medical diagnosis, and management of **ATHLETES & TEAM STAFF** who may sustain a suspected concussion during a sport activity. It aims to ensure that athletes & team staff with a suspected concussion receive timely and appropriate care and proper management to allow them to return 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.

**Who should use this protocol?** This protocol is intended for use by all individuals who interact with athletes inside and outside the context of school and non-school based organized sports activity, including athletes, parents, coaches, officials, teachers, trainers, and licensed healthcare professionals.

For a summary of the **Volleyball Alberta Concussion Protocol** please refer to the [Volleyball Alberta Sport Concussion Pathway](#) figure at the end of this document.

**1. 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 (athletes, 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 an athlete 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 an athlete has suffered a suspected concussion or more serious head injury,
- what measures should be taken to ensure proper medical assessment,
- *Return-to-School* and *Return-to-Sport Strategies*, and
- Return to sport medical clearance requirements

- ▶ **Who:** Athletes, parents, coaches, officials, teachers, and trainers, licensed healthcare professionals
- ▶ **How:** All parents and athletes 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 **Volleyball Alberta Concussion Protocol**. For example, this can be accomplished through pre-season in-person orientation sessions for athletes, parents, coaches, and other sport stakeholders.

## 2. Prevention

Meeuwisse DW, MacDonald K, Meeuwisse WH, et al. ([Concussion incidence and mechanism among youth volleyball players Br J Sports Med 2017; 51: A62-A63](#)) found that the ball impacting the head is the mechanism of injury in 57.1% of all concussions in volleyball. Practice environment accounted for 46.5% of all concussions while 38.4% occurred in game play. The remaining **15.1% occurred in warm-up**. The authors concluded that there is a significant margin for injury prevention as a substantial proportion (61.6%) of concussions happening in a noncompetitive, controlled environment that may be amenable to change that would reduce the potential for such injury. Considering this research, teams will have to use one of the following warm-up processes at Volleyball Alberta events.

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**NEW FOR 2022:** Opposing teams are not permitted to use volleyballs in the free zone during the other teams allocated court time.

**OPTION 1:** Athletes hit in waves whereby all athletes of a similar position attack the ball while their teammates remain on the other side of the net (facing towards the attackers, at the end-line) to shag the balls. Athletes would then switch roles at specific intervals through the warm-up.

- After attacking the ball, athletes will stay on their side of the net (they do not go under the net) and return to the back of the hitting line. This will prevent an athlete from walking through the receiving side.
- Retrieved balls must be returned along the sidelines of the court and not through the receiving court.
- If team members introduce balls to the attacking side, they must be located outside the court prior to the athletes hitting. Ball retrievers will be situated in this location to collect balls safely from the ball retrievers at the back of the line.

**OPTION 2:** After attacking the ball, athletes should land properly on their own side of the net and WALK AROUND THE POST. The athlete would then either remain outside of the court to either a) collect the ball prior to returning it to the coach or b) become a ball retriever for the next attacker.

- A ball retriever (parents or players) should start on the opposite side of the net as the attackers. They may stand on or behind the baseline and face towards the attackers.
- If team members introduce balls to the attacking side, they must be located outside the court prior to the athletes hitting. Ball retrievers will be situated in this location to collect balls safely from the ball retrievers at the back of the line.

**OPTION 3:** During the official warm-up at the net, if a team chooses to utilize a warm-up using both sides of the court (E.g. wash drill), only one ball can be in play at any given time.

- Team members introducing balls should still be located outside the court.

#### **WARM UP RECOMMENDATIONS FROM VOLLEYBALL CANADA:**

- The team not participating in the hitting warm up is encouraged to act as ball retrievers for the hitting team
- Hitting should be directed away from courts with active games and from spectator seating areas if possible

If athletes/team members are moving through the receiving side of the court during their hitting warm-up, the referee will make note of it on the scoresheet and Volleyball Alberta staff will follow up with the teams.

### **3. Head Injury Recognition**

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including athletes, parents, teachers, coaches, teachers, officials, 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. This is particularly important because many sport and recreation venues will not have access to on-site licensed healthcare professionals. A concussion should be suspected:

- in any athlete who sustains a significant impact to the head, face, neck, or body and demonstrates *ANY* of the visual signs of a suspected concussion or reports *ANY* symptoms of a suspected concussion as detailed in the [Concussion Recognition Tool 5](#).
- if a player reports *ANY* concussion symptoms to one of their peers, parents, teachers, or coaches or if anyone witnesses an athlete exhibiting any of the visual signs of concussion.

In some cases, an athlete may demonstrate signs or symptoms of a more severe head or spine injury including convulsions, worsening headaches, vomiting or neck pain. If an athlete demonstrates any of the 'Red Flags' indicated by the [Concussion Recognition Tool 5](#), a more severe head or spine injury should be suspected.

**Tournament Staff should be immediately informed and will initiate the Emergency Action Plan. ONLY TOURNAMENT STAFF SHOULD CALL 911.**

- ▶ **Who:** Athletes, parents, coaches, officials, teachers, trainers, and licensed healthcare professionals
- ▶ **How:** [Concussion Recognition Tool 5](#)

#### 4. 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 an athlete loses consciousness, or it is suspected an athlete 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 athlete 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 an athlete 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, teachers, trainers and officials should not make any effort to remove equipment or move the athlete until an ambulance has arrived and the athlete should not be left alone until the ambulance arrives. After the emergency medical services staff has completed the Emergency Medical Assessment, the athlete should be transferred to the nearest hospital for Medical Assessment. In the case of youth (under 18 years of age), the athlete's parents should be contacted immediately to inform them of the athlete's injury. For athletes 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 an athlete is suspected of sustaining a concussion and there is no concern for a more serious head or spine injury, the player should be immediately removed from the field of play.

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

The athlete should be taken to a quiet area and undergo Sideline Medical Assessment using the Sport Concussion Assessment Tool 5 (SCAT5) or the Child SCAT5. All athletes under 18 must be accompanied by an adult during the Sideline Medical Assessment. The SCAT5 and Child SCAT5 are clinical tools that should only be used by a licensed healthcare professional that has experience using these tools. It is important to note that the results of SCAT5 and Child SCAT5 testing can be normal in the setting of acute concussion. As such, these tools can be used by licensed healthcare professionals to document initial neurological status but should not be used to make sideline return-to-sport decisions in youth athletes. Any youth athlete who is suspected of having sustained a concussion must not return to the game or practice and must be referred for Medical Assessment.

If a youth athlete is removed from play following a significant impact and has undergone assessment by a licensed healthcare professional, but there are NO visual signs of a concussion and the athlete reports NO concussion symptoms then the athlete can be returned to play but **should be monitored for delayed symptoms**.

##### **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.

- ▶ **Who:** Athletic therapists, physiotherapists, medical doctor
- ▶ **How:** [Sport Concussion Assessment Tool 5 \(SCAT5\)](#), [Child Sport Concussion Assessment Tool 5 \(Child SCAT5\)](#)

## 6. Medical Assessment

In order to provide comprehensive evaluation of athletes with a suspected concussion, the medical assessment must rule out more serious forms of traumatic brain and spine injuries, must rule out medical and neurological conditions that can present with concussion-like symptoms, and must make the diagnosis of concussion based on findings of the clinical history and physical examination and the evidence-based use of adjunctive tests as indicated (i.e. CT scan). In addition to nurse practitioners, medical doctors<sup>1</sup> that are qualified to evaluate patients with a suspected concussion include: pediatricians; family medicine, sports medicine, emergency department, internal medicine, and rehabilitation (physiatrists) physicians; neurologists; and neurosurgeons.

In geographic regions of Canada with limited access to medical doctors (i.e. rural 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. The medical assessment is responsible for determining whether the athlete has been diagnosed with a concussion or not. Athletes with a diagnosed concussion should be provided with a [Medical Assessment Letter](#) indicating a concussion has been diagnosed. Athletes that are determined to have not sustained a concussion must be provided with a *Medical Assessment Letter* indicating a concussion has not been diagnosed and the athlete can return to school, work and sports activities without restriction.

- ▶ **Who:** Medical doctor, nurse practitioner, nurse
- ▶ **How:** [Medical Assessment Letter](#)

## 7. Concussion Management

When an athlete has been diagnosed with a concussion, it is important that the athlete's parent/legal guardian is informed. All athletes diagnosed with a concussion must be provided with a standardized [Medical Assessment Letter](#) that notifies the athlete and their parents/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 athlete or their parent/legal guardian to provide this documentation to the athlete's coaches, teachers, or employers. It is also important for the athlete to provide this information to sport organization officials that are responsible for injury reporting and concussion surveillance where applicable.

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

The stepwise progressions for *Return-to-School* and *Return-to-Sport Strategies* are outlined below. As indicated in stage 1 of the *Return-to-Sport Strategy*, reintroduction of daily, school, and work activities using the *Return-to-School Strategy* must precede return to sport participation.

### ***Return-to-School Strategy***

The following is an outline of the *Return-to-School Strategy* that should be used to help student-athletes, parents, and teachers to collaborate in allowing the athlete to make a gradual return to school activities. Depending on the severity and type of the symptoms present student-athletes will progress through the following stages at different rates. If the student-athlete experiences new symptoms or worsening symptoms at any stage, they should go back

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<sup>1</sup> Medical doctors and nurse practitioners are the only healthcare professionals in Canada with licensed training and expertise to meet these needs; therefore all athletes with a suspected concussion should undergo evaluation by one of these professionals.

to the previous stage. Athletes should also be encouraged to ask their school if they have a school-specific Return-to-Learn Program in place to help student-athletes make a gradual return to school.

| Stage | Aim  | Activity   | Goal of each step  |
|-------|--|--|--|
| 1     | Daily activities at home that do not give the student-athlete symptoms | Typical activities during the day as long as they do not increase symptoms (i.e. reading, texting, screen time). Start at 5-15 minutes at a time and gradually build up. | Gradual return to typical activities                                 |
| 2     | School activities  | Homework, reading or other cognitive activities outside of the classroom.  | Increase tolerance to cognitive work                                 |
| 3     | Return to school part-time   | Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day.   | Increase academic activities   |
| 4     | Return to school full-time   | Gradually progress   | Return to full academic activities and catch up on missed schoolwork |

McCorry et al. (2017). Consensus statement on concussion in sport – the 5<sup>th</sup> international conference on concussion in sport held in Berlin, October 2016. *British Journal of Sports Medicine*, 51(11), 838-847.

### ***Volleyball-Specific Return-to-Sport Strategy***

The following is an outline of the Return-to-Sport Strategy that should be used to help athletes, coaches, trainers, and medical professionals to partner in allowing the athlete to make a gradual return to sport activities. An initial period of 24-48 hours of rest is recommended before starting the *Volleyball-Specific Return-to-Sport Strategy*. The athlete should spend a minimum duration of 24 hours without symptom increases at each stage before progressing to the next one. If the athlete experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage. It is important that youth and adult student-athletes return to full-time school activities before progressing to stage 5 and 6 of the Volleyball-Specific Return-to-Sport Strategy. It is also important that all athletes provide their coach with a *Medical Clearance Letter* prior to returning to full contact sport activities.

| Stage | Aim                         | Activity   | Goal of each step   |
|-------|-----------------------------|--|---|
| 1     | Symptom-limiting activity   | Daily activities that do not provoke symptoms  | Gradual re-introduction of work/school activities                 |
| 2     | Light aerobic activity      | Walking or stationary cycling at slow to medium pace. No resistance training<br>-Light intensity jogging or stationary cycling for 15-20 minutes at sub-symptom threshold intensity.<br>-Volleyball specific warm-up and cool-down   | Increase heart rate   |
| 3     | Sport-specific exercise     | Running drills. No head impact activities<br>- Moderate intensity jogging for 30-60 minutes at sub-symptom threshold intensity<br>- Low to moderate impact passing, standing serves, setting, and agility drills (minimal or no jumping)   | Add movement  |
| 4     | Non-contact training drills | Harder training drills, i.e. attacking drills. May start progressive resistance training<br>- Participation in high intensity running and drills<br>- High intensity practice without risk of receiving hard driven spikes to the head<br>- Participation in resistance training work-outs | Exercise, coordination and increased thinking                     |
| 5     | Full contact practice       | Following medical clearance<br>- Participation in full practice without activity restriction   | Restore confidence and assess functional skills by coaching staff |
| 6     | Return to sport             | Normal game play   |   |

McCorry et al. (2017). Consensus statement on concussion in sport – the 5<sup>th</sup> international conference on concussion in sport held in Berlin, October 2016. *British Journal of Sports Medicine*, 51(11), 838-847.

- ▶ **Who:** Medical doctor, nurse practitioner and team athletic therapist or physiotherapist (where available)
- ▶ **How:** *Return-to-Learn Strategy*, *Sport-Specific Return-to Sport Strategy*, [Medical Assessment Letter](#)

## 8. Multidisciplinary Concussion Care

Most athletes who sustain a concussion while participating in sport will make a complete recovery and be able to return to full school and sport activities within 1-4 weeks of injury. However, approximately 15-30% of individuals will experience symptoms that persist beyond this time frame. If available, individuals who experience persistent post-concussion symptoms (>4 weeks for youth athletes, >2 weeks for adult athletes) may benefit from referral to a medically supervised multidisciplinary concussion clinic that has access to professionals with licensed training in traumatic brain injury that may include experts in sport medicine, neuropsychology, physiotherapy, occupational therapy, neurology, neurosurgery, and rehabilitation medicine.

Referral to a multidisciplinary clinic for assessment should be made on an individualized basis at the discretion of an athlete's medical doctor or nurse practitioner. If access to a multidisciplinary concussion clinic is not available, a referral to a medical doctor with clinical training and experience in concussion (e.g. a sport medicine physician, neurologist, or rehabilitation medicine physician) should be considered for the purposes of developing an individualized treatment plan. Depending on the clinical presentation of the individual, this treatment plan may involve a variety of health care professionals with areas of expertise that address the specific needs of the athlete based on the assessment findings.

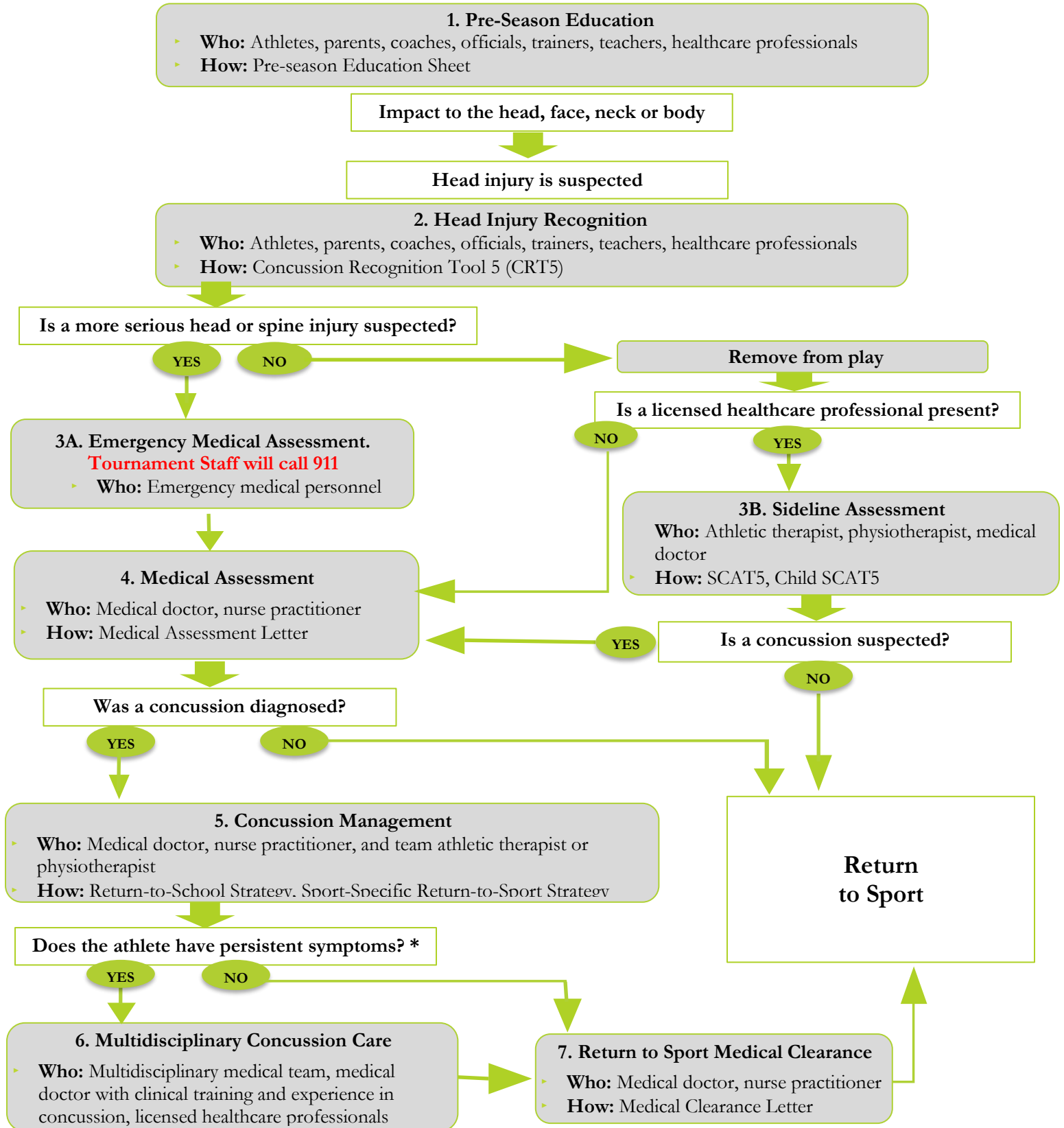
- ▶ **Who:** Multidisciplinary medical team, medical doctor with clinical training and experience in concussion (e.g. a sports medicine physician, neurologist, or rehabilitation medicine physician), licensed healthcare professionals

## 9. Return to Sport

Athletes who have been determined to have not sustained a concussion and those that have been diagnosed with a concussion and have successfully completed their *Return-to-School and Volleyball-Specific Return-to-Sport Strategy* can be considered for return to full sports activities. The final decision to medically clear an athlete to return to full game activity should be based on the clinical judgment of the medical doctor or nurse practitioner taking into account the athlete'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). Prior to returning to full contact practice and game play, each athlete 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 athlete to return to sports. In geographic regions of Canada with limited access to medical doctors (i.e. rural 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. Athletes who have been provided with a [Medical Clearance Letter](#) may return to full sport activities as tolerated. If the athlete experiences any new concussion-like symptoms while returning to play, they should be instructed to stop playing immediately, notify their parents, coaches, trainer or teachers, and undergo follow-up *Medical Assessment*. In the event that the athlete sustains a new suspected concussion, the **Volleyball Alberta Concussion Protocol** should be followed as outlined here.

- ▶ **Who:** Medical doctor, nurse practitioner
- ▶ **Document:** [Medical Clearance Letter](#)

## Volleyball Alberta Concussion Pathway



\*Persistent symptoms: lasting > 4 weeks in children & youth or > 2 weeks in adults