



ALBERTA SPORT PARACHUTING ASSOCIATION CONCUSSION PROTOCOL

Adapted from: Parachute. (2017). Canadian Guideline on Concussion in Sport.
www.parachute.ca/concussion

The Alberta Sport Parachuting Association (ASPA) has developed the **Alberta Sport Parachuting Association Concussion Protocol** or **ASPA Concussion Protocol** to help guide the management of skydivers who may have a suspected concussion as a result of participation in skydiving activities.

Purpose

This protocol covers the recognition, medical diagnosis, and management of skydivers who may sustain a suspected concussion during a skydive or skydiving activity. It aims to ensure that jumpers with a suspected concussion receive timely and appropriate care and proper management to allow them to return back to skydiving safely. This protocol may not address every possible scenario that can occur during skydive-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 skydivers including other skydivers, instructors, coaches, judges, drop zone staff, and licensed healthcare professionals.

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 sport stakeholders (skydivers, instructors, coaches, judges, drop zone staff, and 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 the sport of skydiving,
 - what to do when a skydiver has suffered a suspected concussion or more serious head injury,
 - what measures should be taken to ensure proper medical assessment,
 - *Return-to-Sport Strategies*, and
 - Return to sport medical clearance requirements
- **Who:** Skydivers, instructors, coaches, judges, drop zone staff, licensed healthcare professionals
 - **How:** Pre-season Concussion Education Sheet

All skydivers are encouraged to review a copy of the *Pre-season Concussion Education Sheet* prior to the first skydive of the season. In addition to reviewing information on concussion, it is also important that all sport stakeholders have a clear understanding of the **ASPA Concussion Protocol**. For example, this can be accomplished through pre-season in-person orientation sessions for skydivers, instructors, coaches, drop zone staff, and other stakeholders.

2. Head Injury Recognition

Although the formal diagnosis of concussion should be made following a medical assessment, all sport stakeholders including skydivers, instructors, coaches, judges, and drop zone staff can be valuable in the recognition and reporting of jumpers 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 skydiver 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 skydiver reports *ANY* concussion symptoms to one of their peers, instructors, coaches, or staff member or if anyone witnesses a skydiver exhibiting any of the visual signs of concussion.

In some cases, a skydiver may demonstrate signs or symptoms of a more severe head or spine injury including convulsions, worsening headaches, vomiting or neck pain. If a jumper demonstrates any of the 'Red Flags' indicated by the *Concussion Recognition Tool 5*, a more severe head or spine injury should be suspected, and Emergency Medical Assessment should be pursued.

- **Who:** Skydivers, instructors, coaches, judges, drop zone staff, licensed healthcare professionals
- **How:** [Concussion Recognition Tool 5](#)

3. Onsite Medical Assessment

Depending on the suspected severity of the injury, an initial assessment may be completed by emergency medical professionals or by an on-site licensed healthcare professional where available. In cases where a skydiver loses consciousness or it is suspected that a skydiver might have a more severe head or spine injury, Emergency Medical Assessment by emergency medical professionals should take place (see 3a below). If a more severe injury is not suspected, the skydiver should undergo Sideline Medical Assessment or Medical Assessment, depending on if there is a licensed healthcare professional present (see 3b below).

3a. Emergency Medical Assessment

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

Other skydivers, instructors, coaches, judges, or drop zone staff should not make any effort to remove equipment or move the skydiver until an ambulance has arrived and the skydiver should not be left alone until the ambulance arrives. After the emergency medical services staff has completed the Emergency Medical Assessment, the jumper should be transferred to the nearest hospital for Medical Assessment. In the case of youth (under 18 years of age), the skydiver's parents should be contacted immediately to inform them of the skydiver's injury. For jumpers over 18 years of age, their emergency contact person should be contacted if one has been provided.

- **Who:** Emergency medical professionals

3b. Sideline Medical Assessment

If a skydiver is suspected of sustaining a concussion and there is no concern for a more serious head or spine injury, they should not be permitted to jump again that day.

Scenario 1: If a licensed healthcare professional is present

The skydiver should be taken to a quiet area and undergo Sideline Medical Assessment using the Sport Concussion Assessment Tool 5 (SCAT5). The SCAT5 is a clinical tool 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 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 athletes. Any jumper who is suspected of having sustained a concussion must not return to skydiving and must be referred for Medical Assessment.

If a skydiver is grounded 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 jumping activities but should be monitored for delayed symptoms.

In the case of national team-affiliated skydivers (age 18 years and older), an 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 the Sideline Medical Assessment. In these cases, the skydiver may be returned to jumping without a *Medical Clearance Letter* but this should be clearly communicated to the event staff. Skydivers that have been cleared to return to skydiving should be monitored for delayed symptoms. If the skydiver develops any delayed symptoms he or she should be grounded and undergo medical assessment by a medical doctor or nurse practitioner.

Scenario 2: If there is no licensed healthcare professional present

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

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

4. Medical Assessment

In order to provide comprehensive evaluation of skydivers 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 doctors¹ 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.

¹ 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.

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 skydiver has been diagnosed with a concussion or not. Skydivers with a diagnosed concussion should be provided with a *Medical Assessment Letter* indicating a concussion has been diagnosed. Skydivers 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 skydiver can return to school, work and sports activities without restriction.

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

5. Concussion Management

When a skydiver has been diagnosed with a concussion, it is important that the skydiver's parent/legal guardian is informed if they are under the age of majority. All jumpers diagnosed with a concussion must be provided with a standardized *Medical Assessment Letter* that notifies the skydiver 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 skydiver to provide this documentation to instructors, coaches, or employers. It is also important for the skydiver to provide this information to organization officials that are responsible for injury reporting and concussion surveillance where applicable.

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

The stepwise progressions for *Return-to-Sport Strategies* are outlined below. As indicated in stage 1 of the *Return-to-Sport Strategy*, reintroduction of daily, school, or

work activities using a *Return-to-School Strategy* or *Return-to-Work Strategy* must precede return to sport participation.

Return-to-Work Strategy

The following is an outline of the *Return-to-Work Strategy* that should be used to help skydivers and employers to collaborate in allowing the skydiver to make a gradual return to their work activities. Depending on the severity and type of the symptoms present the jumper will progress through the following stages at different rates. If the skydiver experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage. Skydivers should also be encouraged to ask their employer if they have a job-specific Return-to-Work Program in place to help employees make a gradual return to work.

Stage	Aim	Activity	Goal of each step
1	Initial cognitive and physical rest	After being diagnosed with a concussion, start with a short period of rest for 24 to 48 hours. Stay at home in a relaxing environment. Try simple activities such as drawing or listening to quiet music.	Gradual return to typical activities
2	Light cognitive and physical activity	Add light activities, as long as they don't make your symptoms worse. Try simple chores at home, going for short walks, reading and using a screened device, such as a computer or tablet, for short periods. Be sure to take breaks and try to maintain a regular sleep schedule.	Increase tolerance to cognitive work
3	Prepare to return to work	Add more cognitive activity, and for longer periods of time, as tolerated. Continue building up your physical activity, such as running regular errands, gardening, jogging and light exercise. You can try your work commute to see how it makes you feel. Contact your workplace to develop your individual, gradual return to work plan. The plan should consider the number of days and hours you will work, your workload, and your work environment (such as lighting and noise).	Increase cognitive activities
4	Reduced working hours with accommodations	Begin your return to work based on your plan. Use the accommodations you need, such as a quiet work station and regular breaks. Gradually increase working hours as long as your symptoms do not return or get worse.	Return to work part-time with accommodations
5	Regular working hours with accommodations	Gradually decrease accommodations as tolerated. Be aware of how much energy you have left after the work day for household and social activities.	Return to work full-time with accommodations
6	Return to work	Full return to your regular work schedule without accommodations.	

This information has been adapted from: BCIRPU. (2019). Concussion Resources for Workers & Workplaces.

Important: If the work you do can put your safety or the safety of others at risk, get medical clearance before returning to those tasks. Examples include operating heavy machinery, driving for long periods of time or working at heights.

Skydiving-Specific Return-to-Sport Strategy

The following is an outline of the Return-to-Sport Strategy that should be used to help skydivers, instructors, coaches, and medical professionals to partner in allowing the skydiver to make a gradual return to skydiving activities. An initial period of 24-48 hours of rest is recommended before starting the *Skydiving-Specific Return-to-Sport Strategy*. The skydiver should spend a minimum duration of 24 hours without symptom increases at each stage before progressing to the next one. If the skydiver experiences new symptoms or worsening symptoms at any stage, they should go back to the previous stage. It is recommended that all skydivers obtain a *Medical Clearance Letter* prior to returning to full skydiving 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. <i>-Light intensity: walking, jogging, or stationary cycling for 15-20 minutes</i>	Increase heart rate and movement
3	Ground training/ dirt diving, visualization	Increase intensity of aerobic activity to moderate. On ground training including dirt diving and visualization.	Increased physical movement and mental activity
4	Tandem skydive	Skydiving tandem including freefall movements, deployment, and canopy control.	Incorporation of skydiving with failsafe in the event of symptom presentation
5	Solo skydive	Following medical clearance <i>- Participation in solo skydive</i>	Restore confidence
6	Return to all skydive activities	Return to prior level of jumping activities	

Adapted from: McCrory et al. (2017). Consensus statement on concussion in sport – the 5th 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-Work Strategy, Skydiving-Specific Return-to Sport Strategy, Medical Assessment Letter*

6. 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 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

7. Return to Skydiving

Skydivers who have been determined to have not sustained a concussion and those that have been diagnosed with a concussion and have successfully completed their *Skydiving-Specific Return-to-Sport Strategy* can be considered for return to full skydive activities. The final decision to medically clear a skydiver to return to full jumping activity should be based on the clinical judgment of the medical doctor or nurse practitioner taking into account the skydiver'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 skydiving activities, each jumper that has been diagnosed with a concussion is recommended to provide their instructor 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.

Skydivers who have been provided with a *Medical Clearance Letter* may return to full skydiving activities as tolerated. If the jumper experiences any new concussion-like

symptoms while returning, they should be instructed to stop immediately, notify their instructors, coaches, and undergo follow-up *Medical Assessment*. In the event that the skydiver sustains a new suspected concussion, the **Alberta Sport Parachuting Association Concussion Protocol** should be followed as outlined here.

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