Parachute
PREVENTING INJURIES. SAVING LIVES.

Update November 2018

Statement on Concussion Baseline Testing in Canada

Parachute is releasing this updated statement to clarify the role of concussion baseline testing for Canadian youth and adult athletes. Members of Parachute's Concussion Expert Advisory Committee and the Canadian Concussion Collaborative were consulted in the development of this updated statement.

Background

On July 28, 2017, Parachute released the *Canadian Guideline on Concussion in Sport*. This Guideline was developed based on the published systematic reviews that informed the 5th International Consensus Conference on Concussion in Sport (McCrory et al., 2017; Davis et al., 2017), expert consensus opinion from the Parachute Concussion Expert Advisory Committee, and input from important stakeholders in Canadian sport, health, government, and education. The overall goal of the *Canadian Guideline on Concussion in Sport* is to provide clear and consistent information to all Canadian sport stakeholders (including athletes, parents, coaches, officials, teachers, trainers, and licensed healthcare professionals) on evidence-informed approaches that can prevent concussion and more serious forms of traumatic brain injury and help identify and manage an athlete with a suspected concussion.

One related issue that is not discussed in the *Canadian Guideline on Concussion in Sport* but that requires clarification is the role of concussion baseline testing in Canadian youth and adult athletes.

Baseline testing refers to the practice of having an athlete complete certain concussion assessment tools prior to sport participation to provide baseline measurements that can be compared to post-injury values in the event of a suspected concussion.

In recent years, baseline testing using a number of tools has become increasingly marketed to athletes throughout Canada by various health professionals as a mandatory or recommended practice to help improve the care of athletes post-injury with suspected concussion. Although research continues to help examine the value of baseline testing with certain tools in certain athlete populations, Parachute makes the following key recommendation with respect to the use of baseline testing in Canada.

As research continues to shed light on the field of concussion, these recommendations on the use of baseline testing in athletes may require modification to incorporate new knowledge. Sport organizations are encouraged to develop and keep current processes within their organizations that promote evidence-based prevention, recognition, and management of concussion as outlined in the *Canadian Guideline on Concussion in Sport*.

Recommendation for the use of concussion baseline testing in Canadian youth and adult athletes

Baseline testing using any tool or combination of tools is not required to provide post-injury care of those who sustain a suspected or diagnosed concussion and mandatory pre-season testing is not recommended.

In general, current evidence does not support a significant added benefit of baseline testing athletes. This includes the Child SCAT5 and the SCAT5 tools, as well as neuropsychological and neurocognitive tests, both computerized or not.

However, there may be unique athlete populations and sport environments where baseline testing may be considered. These situations should be considered the exception and not the rule.

- Clinical neuropsychologists may consider baseline neurocognitive or neuropsychological testing in select youth and adult athletes who have pre-existing conditions, such as a history of previous concussion, attention-deficit hyperactivity disorder or learning disorders, that may impact the interpretation of post-injury test results (Davis et al., 2017; McCrory et al., 2017).
- Certain teams and sporting federations have well-established physician-supervised concussion protocols with dedicated licensed healthcare professionals working directly and continuously with the athletes (i.e., that are present at training and competition events). In these sporting environments, baseline testing may be considered as an optional assessment within the comprehensive concussion protocol as long as the medical teams caring for these athletes include licensed healthcare professionals who are optimally trained to administer and interpret these tests.

Baseline testing of youth and adult athletes that do not have access to dedicated sideline licensed healthcare professionals working with team physicians within a comprehensive concussion protocol is not recommended.

Additional Considerations, Post-Injury Testing

Assessment Tools and Sideline Medical Assessment

Tools such as the Child SCAT5, SCAT5 and others are not to be used to make sideline decisions on returning youth athletes to sport. The *Canadian Guideline on Concussion in Sport* states that licensed healthcare professionals may use tools such as the Child SCAT5 or SCAT5 to document initial neurological status in athletes with a suspected concussion but these tools should not be used to make sideline return-to-sport decisions in youth athletes (Parachute, 2017). Any youth athlete who sustains a suspected concussion must not return to the game or practice the same day and should be immediately referred for medical assessment. Medical assessment should be

carried out by a medical doctor or nurse practitioner* with expertise in concussion management who is licensed to independently perform a clinical history, physical examination, order all necessary diagnostic tests including imaging (X-ray, CT, MRI) when indicated, and make urgent referrals to medical sub-specialists as needed.

Assessment Tools and Concussion Management

Current evidence supports the use of SCAT5 as a tool to help assess athletes with acute concussion, but its utility appears to decrease significantly 3-5 days post-injury (McCrory et al., 2017). Concussion management and return-to-sport decisions should be multifaceted and made on an individualized patient basis by the managing medical doctor or nurse practitioner, not by using any one specific test or group of tests. If post-injury neurocognitive or neuropsychological testing is deemed clinically necessary, it is recommended that these tests be interpreted by a registered neuropsychologist (McCrory et al., 2017; Echemendia et al., 2009).

All athletes diagnosed with a concussion are to be managed according to their Return-to-School and Sport-Specific Return-to-Sport Strategies under the supervision of a medical doctor or nurse practitioner with expertise in concussion management. When team physicians and therapists are available, post-injury care is encouraged to be a collaborative process to optimize athletes' progressions through their Sport-Specific Return-to-Sport Strategy.

All athletes with a suspected or diagnosed concussion must receive written medical clearance by a medical doctor or nurse practitioner with expertise in concussion management prior to returning to sport activities.

Key Messages

The following key messages complement this recommendation and are important for communicating about concussion and baseline testing:

- **Recognize and remove.** Sport organizations are encouraged to develop processes within their organizations to "recognize and remove" an athlete when a concussion is suspected (See *Concussion Recognition Tool 5*).
- **Appropriate medical assessment, management, and return to sport are key**. Concussion management and return-to-sport decisions are inter-disciplinary and should be made on an individualized basis not by using any one specific test or group of tests.
- **Pre-season education is key to optimizing concussion prevention and management.** All sport stakeholders are encouraged to review the Pre-season Education Sheet from the *Canadian Guideline on Concussion in Sport* prior to participating in school and non-school based sports.

---

*__Note__: *The licensed scope of practice of nurse practitioners may vary from province to province. This should be considered when applying these recommendations to athletes competing in different regions of Canada.*

References

Davis, G.A., et al. (2017). What is the difference in concussion management in children as compared with adults? A systematic review. *British Journal of Sports Medicine, 51*(12), 949-957.

Echemendia, R., et al. (2009). Who should conduct and interpret the neuropsychological assessment in sports-related concussion? *British Journal of Sports Medicine, 43*(Suppl I), i32-35.

McCrory, P., 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.

Parachute. (2017). *Canadian Guideline on Concussion in Sport*. Toronto: Parachute.