



# **Alpine Ontario Alpin Concussion and Return to Sport Policy & Protocols 2015**

*Alpine Ontario has adopted the concussion protocols as published by the International Ski Federation in the medical guidelines. The full FIS medical guidelines can be found on the FIS website. As follows is the section from the publication specifically on concussion and concussion management.*



## FIS Concussion Guidelines

### 11.1 Summary Principles

- Concussion must be taken extremely seriously to safeguard the long-term welfare of athletes.
- Athletes suspected of having concussion must be removed from play and must not resume competition or training.
- Athletes suspected of having concussion must be medically assessed.
- Athletes suspected of having concussion or diagnosed with concussion must go through a graduated return to play protocol (GRTP).
- Athletes must receive medical clearance before returning to play.

### 11.2 Introduction

FIS takes Athlete Welfare seriously and aims to follow the Zurich Consensus (2008/2012) on Concussion in Sport guidelines. The guidelines were designed to be used by physicians and other health professionals as well as team management, teachers, parents and athletes. The guidelines are meant to ensure that athletes who suffer concussion are managed effectively to protect their long-term health and welfare. Scientific knowledge in the field of concussion is constantly evolving and the consensus process will make sure that the FIS guidelines will keep pace with these changes.

### 11.3 What is Concussion?

What is Concussion? Concussion is a complex process caused by trauma that transmits force to the brain either directly or indirectly and results in temporary impairment of brain function. Its development and resolution are rapid and spontaneous. An athlete can sustain a concussion without losing consciousness. Concussion is associated with a graded set of clinical signs and symptoms that resolve sequentially. Concussion reflects a functional rather than structural injury and standard neuro-imaging is typically normal.

#### 11.3.1 Concussion must be taken extremely seriously

Concussion producing forces are common in snow sports; fortunately most of these do not result in concussion. There is widespread variation in the initial effects of concussion. Recovery is spontaneous often with rapid resolution of signs, symptoms and changes in cognition (minutes to days). This could increase the potential for athletes to ignore concussion symptoms at the time of injury or return to play prior to the full recovery from a diagnosed concussion. This may result in a more serious brain injury or a prolonged recovery period. The potential for serious and prolonged injury emphasises the need for comprehensive medical assessment and follow-up until the concussion has fully resolved. Returning to play before complete resolution of the concussion exposes the athlete to recurrent concussions that might take place with ever decreasing forces. We have concerns that repeat concussion could shorten an athlete's career and may have some potential to result in permanent neurological impairment. Athletes must be honest with themselves and medical staff for their own protection.





## 11.4 What are the signs of Concussion?

The common signs and symptoms indicating that an athlete may have concussion are listed below in Table 1. If an athlete shows any of the signs described in the Table (as a result of a direct blow to the head, face, neck or elsewhere on the body with a force being transmitted to the head) they have suspected concussion.

**Table 1: Common early signs and symptoms of concussion**

Indicator	Evidence
<b>Symptoms</b>	Headache, dizziness, “feeling in a fog”
<b>Physical signs</b>	Loss of consciousness, vacant expression, vomiting, inappropriate playing behaviour, unsteady on legs, slowed reactions
<b>Behavioural changes</b>	Inappropriate emotions, irritability, feeling nervous or anxious
<b>Cognitive impairment</b>	Slowed reaction times, confusion/disorientation, poor attention and concentration, loss of memory for events up to and/or after the concussion
<b>Sleep disturbance</b>	Drowsiness

## Stage 1: Diagnosis and Management of Concussion

### 11.5 What happens if an athlete is injured and has suspected concussion?

Diagram 1 below indicates what should happen if an athlete has suspected concussion. It addresses the situation both when a Medical Practitioner and/or Healthcare Professional is present or is not present. If an athlete is suspected of having concussion that athlete must be removed from the field of play and must not resume.

### 11.6 Medical Practitioner and/or Healthcare Professional present

Where an injury event with the potential to cause a head injury or concussion occurs and there is a Medical Practitioner or Healthcare Professional present the athlete will be examined and if any of the signs or symptoms in Table 1 are identified and/or the athlete fails to answer correctly the five memory questions in the Pocket Concussion Recognition Tool (PCRT) the athlete MUST be removed from the field of play for a comprehensive medical evaluation. An assessment of the athlete’s balance is likely to form part of this off-field evaluation. The athlete MUST NOT resume participation once removed from the field of play for suspected concussion.





## 11.7 Examples of Memory questions:

- At what venue are we today?
- Who was leading after the first run?
- Where were you competing last week?
- Where were you placed in your last competition?

The athlete must be removed in a safe manner in accordance with emergency management procedures. If a cervical spine injury is suspected the athlete should only be removed by emergency Healthcare Professionals with appropriate spinal care training.

If a Medical Practitioner is present they can use the **Sports Concussion Assessment Tool SCAT3** (<http://www.fis-ski.com/uk/medical/medical.html>) or other diagnostic tools to assist in the comprehensive medical evaluation of athletes with concussion or suspected concussion. **Note that SCAT3 must only be used for athletes aged from 10 years and older.**

An athlete suspected of having concussion shall move to Stage 2, the GRTP protocol, irrespective of the subsequent diagnosis.

## 11.8 Medical Practitioner and/or Healthcare Professional not present

If there is no Medical Practitioner or Healthcare Professional present, the athlete who is injured may be disorientated and unable to make a judgement about their own condition. Fellow athletes, coaches, Race Officials, team managers, administrators or parents who observe an injured athlete displaying any of the signs in Table 1 after an injury event with the potential to cause a head injury or concussion have a duty of care, and **MUST** do their best to ensure that the athlete is removed from the field of play in a safe manner.

The athlete must **not** be left on his or her own and must **not** be allowed to drive a vehicle. If a medical practitioner is not available on-site the athlete must be referred to a medical practitioner for diagnosis and comprehensive assessment as soon as possible.

**Pocket Concussion Recognition Tool (Appendix 3)** can be used to assist in the identification of suspected concussion where a medical practitioner is not present at the time of the incident. Most importantly if an athlete:

- a. Shows any of the listed symptoms in Table 1; or
  - b. Fails to answer any of the memory questions correctly in Pocket CRT; or
  - c. Shows a lack of balance, or any of the red flag symptoms listed in Pocket CRT; or
  - d. There are any concerns that the athlete is suspected of having concussion;
- then concussion must be suspected and the athlete must be removed from play and referred to a Medical Practitioner or Emergency Department for diagnosis and comprehensive assessment as soon as possible.

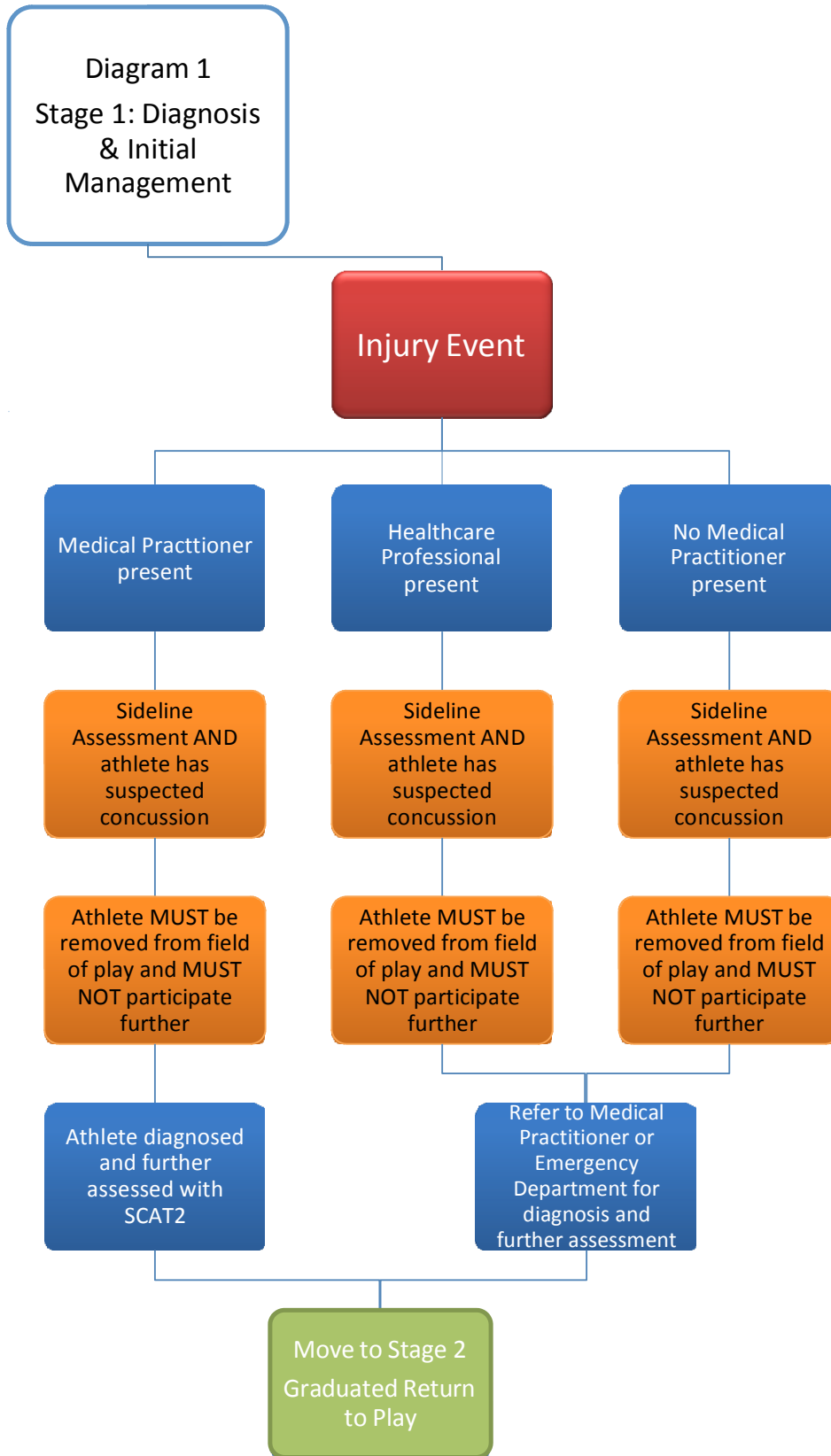
An athlete suspected of having concussion shall move to Stage 2, the GRTP protocol, irrespective of the diagnosis.

**Pocket CRT** is available on <http://www.fis-ski.com/uk/medical/medical.html>.

## 11.9 Onset of Symptoms

It should be noted that the symptoms of concussion may first present at any time (but typically in the first 24 – 48 hours) after the incident which caused the suspected concussion.







## 11.10 Modifying Factors in Diagnosis and Management of Concussion

Modifying factors are those that may influence the investigation and management of concussion including the GRTP. In some cases they may predict the potential for prolonged or persistent symptoms (**Table 2**).

**Table 2: Concussion Modifiers**

Factors	Modifier
Symptoms	Number Duration (>10 days) Severity
Signs	Prolonged loss of consciousness (>1 min) Amnesia
Sequelae	Concussive convulsions
Temporal	Frequency – repeated concussions over time Timing – injuries close together in time “Recency” – recent concussion or traumatic brain injury
Threshold	Repeated concussions occurring with progressively less Impact force or slower recovery after each successive concussion
Age	Child (<10 years) and adolescent (10 to 18 years)
Co- and premorbidities	Migraine, depression or other mental health disorders, attention deficit hyperactivity disorder (ADHD), learning disabilities, sleep disorders
Medication	Psychoactive drugs, anticoagulants
Behaviour	Dangerous style of play
Sport	High risk activity, contact and collision sport, high sporting level

## 11.11 Children & Adolescents

Whilst the guidelines apply to all age groups particular care needs to be taken with children and adolescents due to the potential dangers associated with concussion in the developing brain.

Children under ten years of age may display different concussion symptoms and should be assessed by a Medical Practitioner using diagnostic tools. As for adults, children (under 10 years) and adolescents (10 – 18 years) with suspected concussion **MUST** be referred to a Medical Practitioner immediately. Additionally, they may need specialist medical assessment. The Medical Practitioner responsible for the child's or adolescent's treatment will advise on the return to play process, however, a more conservative GRTP approach is recommended. It is appropriate to extend the amount of time of asymptomatic rest and /or the length of the graded exertion in children and adolescents.

**Children and adolescents must not return to play without clearance from a Medical Practitioner.**

**For the use of Medical Practitioners only, the SCAT3-CHILD concussion assessment protocol can be downloaded on <http://www.fis-ski.com/uk/medical/medical.html>**





## Stage 2: Graduated Return to Play (G RTP)

### 11.12 Following a concussion or suspected concussion how does the athlete return to play?

Following a concussion or suspected concussion the management of a G RTP should be undertaken on a case by case basis and with the full cooperation of the athlete. This will be dependent on the time in which symptoms are resolved. It is important that concussion is managed so that there is physical and cognitive rest until there are no remaining symptoms. Activities that require concentration and attention should be avoided until symptoms have been absent for a minimum of 24 consecutive hours without medication that may mask the symptoms e.g. headache tablets, anti-depressant medication, sleeping medication, caffeine.

The modifying factors in Table 2 should also be taken into consideration. The G RTP process which is managed by a Medical Practitioner is shown in Diagram 2.

### 11.13 When G RTP is managed by a Medical Practitioner

If a Medical Practitioner (with the assistance of a Healthcare Professional, as applicable) is managing the recovery of the athlete it is possible for the athlete to return to play after a minimum of six days having successfully followed and completed each stage of the G RTP protocol.

The Medical Practitioner may observe the athlete at each stage of the G RTP protocol but may also delegate the observation to a Healthcare Professional while remaining responsible for the management of the protocol. The G RTP applies to all situations including tournaments. An indicative minimum G RTP protocol is provided in Table 3. Provided that the athlete with concussion or suspected concussion is, and remains, symptom free the athlete may commence the G RTP.

Before an athlete can restart exercise they must be symptom free for a period of 24 hours (Level 1) and then they may move to the next stage (Level 2). Under the G RTP protocol, the athlete can proceed to the next stage if no symptoms of concussion (SCAT 3 provides the symptom checklist) are shown at the current stage (that is, both the periods of rest and exercise during that 24-hour period). This includes level 1 where the athlete must experience a minimum of 24 consecutive symptom-free hours of rest prior to moving on to Level 2.

Where the athlete completes each stage successfully without any symptoms the athlete would take approximately one week to proceed through the full rehabilitation protocol. If any symptoms occur while progressing through the G RTP protocol, the athlete must return to the previous stage and attempt to progress again after a minimum 24-hour period of rest has passed without the appearance of any symptoms.

After Level 4 the athlete resumes full contact practice and the Medical Practitioner and the athlete must first confirm that the athlete can take part. Full contact practice equates to return to play for the purposes of concussion. However return to play itself shall not occur until Level 6 (**Table 3**).

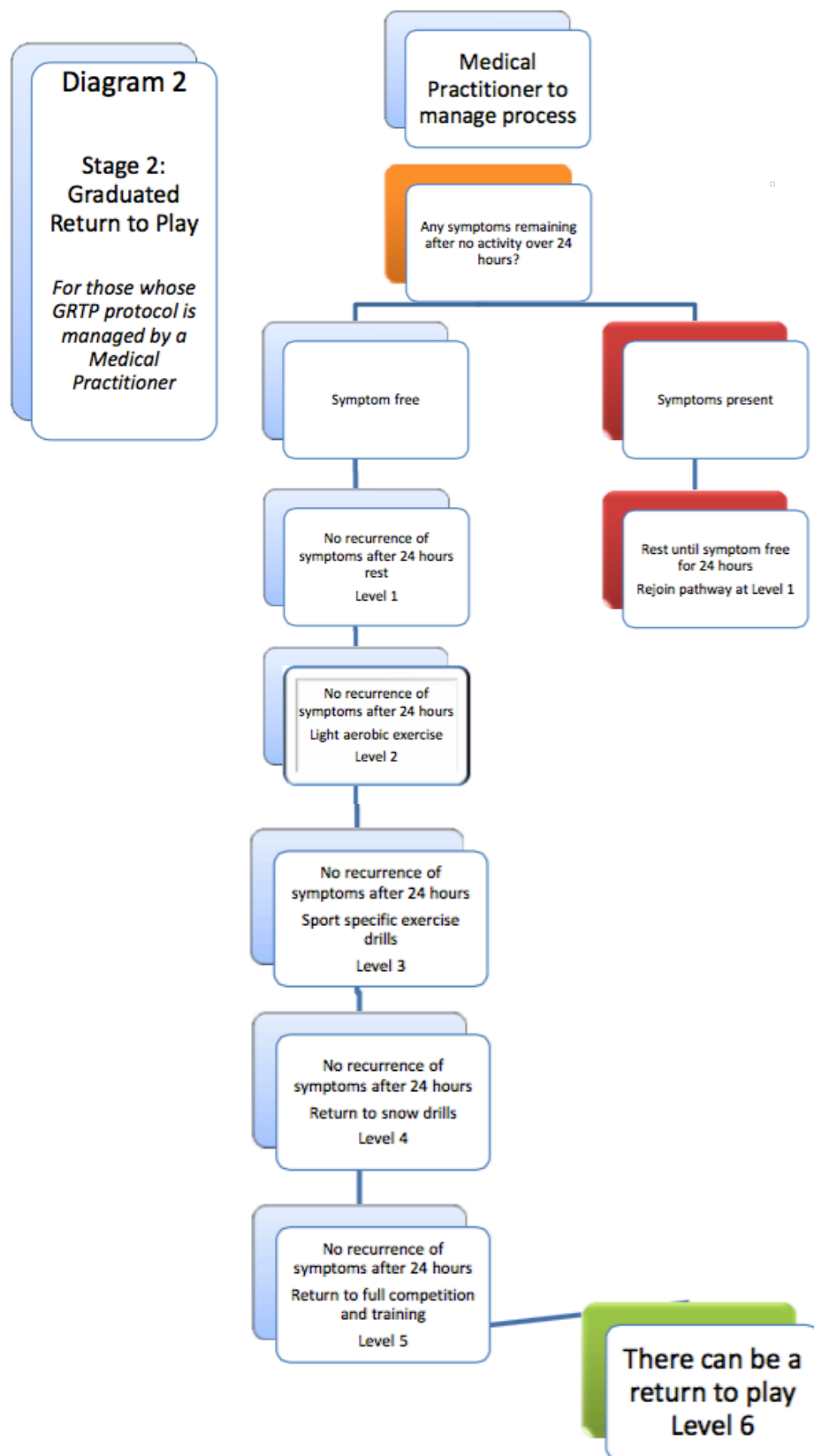




**Table 3: GRTP Protocol**

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity, minimum 24 hours following the injury where managed by a medical practitioner, otherwise minimum 14 days following the injury	Complete physical and cognitive rest without symptoms	Recovery
2. Light aerobic exercise during 24-hour period	Walking, swimming or stationary cycling keeping intensity, <70% maximum predicted heart rate. No resistance training. Symptom free during full 24-hour period.	Increase heart rate
3. Sport-specific exercise during 24-hour period	Running drills. No head impact activities. Symptom free during full 24-hour period.	Add movement
4. Non-contact training drills during 24-hour period	Progression to more complex training drills, e.g. passing drills. May start progressive resistance training. Symptom free during full 24-hour period.	Exercise, coordination, and cognitive load
5. Full Contact Practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. After 24 hours return to play	Player rehabilitated	Recovered







## 11.14 Where GRTP is NOT managed by a Medical Practitioner

There may be extreme situations where an athlete does not have access to a Medical Practitioner to diagnose concussion or to manage the GRTP. In these situations if an athlete has shown signs of concussion that athlete must be treated as having suspected concussion and must not play until at least the 21st day after the incident and should follow the GRTP process outlined in Diagram 3. Other athletes, coaches and administrators associated with the athlete should insist on the guidelines being followed.

If an athlete has been diagnosed with concussion by a Medical Practitioner but does not have access to a Medical Practitioner to manage the GRTP that athlete must not participate until at least the 21st day after the incident and should follow the GRTP process outlined in Diagram 3.

In the above situations the GRTP process may commence after a 14 day stand-down period from playing sport and/or training for sport and only if there are no symptoms of concussion.

Ideally the process should be managed and observed by someone familiar with the athlete who could identify any abnormal signs displayed by the athlete. The Pocket Concussion Recognition Tool (Pocket CRT, available on <http://www.fis-ski.com/uk/medical/medical.html>) will assist the person managing the process.

Before an athlete can restart exercise they must be symptom free for a period of 14 days (Level 1) and then they may move to the next stage (Level 2). Under the GRTP protocol, the athlete can proceed to the next stage only if no symptoms of concussion (SCAT 3 provides the symptom checklist) are shown at the current stage (that is, both the periods of rest and exercise during that 24-hour period).

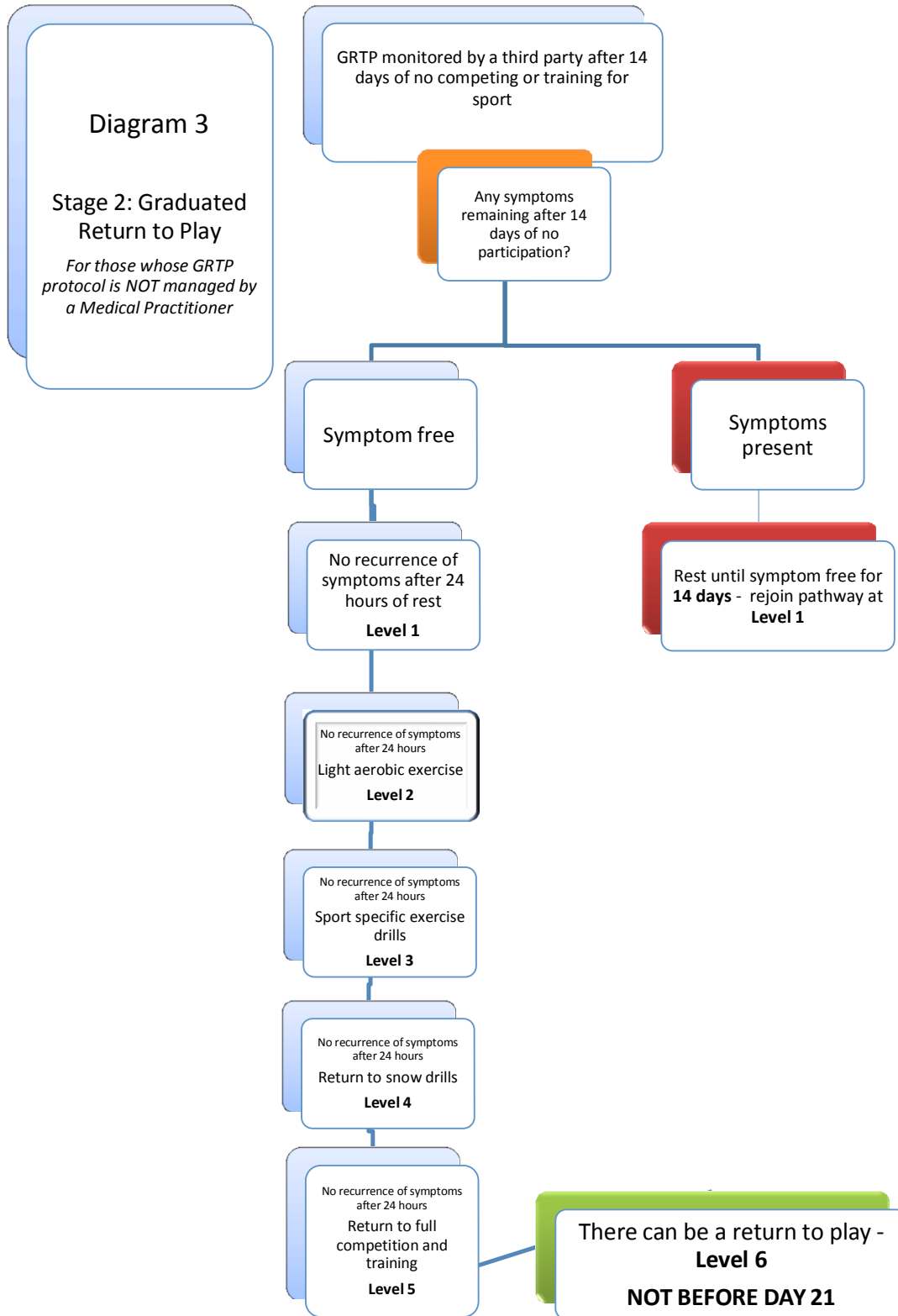
Where the athlete completes each stage successfully without any symptoms the athlete would take approximately one week to proceed through the full rehabilitation protocol from Level 1. If any symptoms occur while going through the GRTP protocol, the athlete must return to the previous stage at which he/she did not experience any symptoms and attempt to progress again after a minimum 24-hour period of rest has passed without the reappearance of any symptoms.

After Level 4 the athlete resumes full training and competition and the Medical Practitioner and the athlete must confirm that the athlete can take part. Full contact practice equates to return to play for the purposes of concussion. However return to play itself shall not occur until Level 6 (Table 3).

Clearance to return to play by a Medical Practitioner should always be sought.

Adolescents and children must have clearance from a Medical Practitioner before they can return to the field of sport.







## 11.15 Recurrence of symptoms - 24 hours rest

It is recognised that athletes will want to return to play as soon as possible following a concussion. Athletes, coaches, management, parents and teachers must exercise caution to:

- a. Ensure that all symptoms have subsided;
- b. Ensure that the GRTP protocol is followed; and
- c. Ensure that the advice of Medical Practitioners (and where applicable Healthcare Professionals) is strictly adhered to.

In doing so, all concerned can reduce the risk to an athlete's career longevity and long term health.

All involved in the process of concussion management (including those mentioned above) must be vigilant for the return of symptoms (including depression and other mental health issues) after a concussive incident even if the GRTP has been successfully completed. If symptoms recur the athlete must consult a Medical Practitioner and those involved in the process of concussion management and/or aware of the return of symptoms should do all they can to ensure that the athlete consults a Medical Practitioner as soon as possible.

## 11.16 Definitions

"GRTP" means graduated return to play.

"Healthcare Professional" means an appropriately qualified and practising physiotherapist, nurse, osteopath, chiropractor, paramedic, or athletic trainer who has been trained in the identification of concussion symptoms and the management of a concussed athlete.

"Medical Practitioner" means a doctor of medicine.

"Athlete" means a participant in any of the FIS disciplines.

"SCAT" means Sports Concussion Assessment Tool.

"Pocket CRT" means Pocket Concussion Recognition Tool.

## References

[Zurich 2012 – Consensus Statement on Concussion in Sport](#)  
(*Br J Sports Med* 2013;**47**:250-258 doi:10.1136/bjsports-2013-092313)

## **FIS Concussion Guidelines**

