



Northern  
Territory  
Government

DEPARTMENT OF  
NATURAL RESOURCES, ENVIRONMENT, THE ARTS AND SPORT

**NORTHERN TERRITORY INSTITUTE OF SPORT**

# **SPORTS MEDICINE AND PHYSIOTHERAPY POLICY**

January 2012

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## **INTRODUCTION**

The NT Institute of Sport (NTIS) has a duty of care to support and facilitate the training, preparation and competition of its scholarship athletes in a way that minimises the risk of injury and illness. This policy sets to provides clear guidelines for athletes to ensure effective risk management.

## **POLICY FOR PRE-EXISTING CONDITIONS AND PRE-ENTRANCE SPORTS MEDICINE SCREENING**

It is the responsibility and intention of the NTIS not to allow athletes to enter an NTIS scholarship when it is known there is a pre-existing condition, illness or injury, that places the athlete 'at risk' of being exacerbated or insufficiently prepared to undergo a high volume and/or high intensity training program.

All athletes who receive conditional acceptance from their sport to enter an NTIS program must undergo a standard NTIS medical screening from a registered doctor (GP) at their own expense. A medical screening form is sent from the NTIS to the program coach to distribute to potentially identified athletes for the doctor to complete and sign during the medical examination.

Full disclosure of relevant medical history is required to be completed on the medical screening form by the doctor, athlete or guardian. For each new or existing NTIS scholarship, a new annual medical screening is required each instance to assess the risk for the athlete. The NTIS Sports Medicine and Physiotherapy Coordinator may seek further clarification from the certifying doctor or request that an athlete seek further opinion from a medical specialist at the expense of the athlete.

Upon a successful medical clearance the NTIS Sports Medicine and Physiotherapy Coordinator will advise if the athlete is deemed able to participate in a high performance training program.

The NTIS Head Coach and Sport Program management team will receive notification of each athlete's sports medicine clearance to enter the program from the Sports Medicine Co-ordinator prior to the commencement of the program.

## **NTIS SPORTS MEDICINE CLINIC OPERATION**

### **OPERATION**

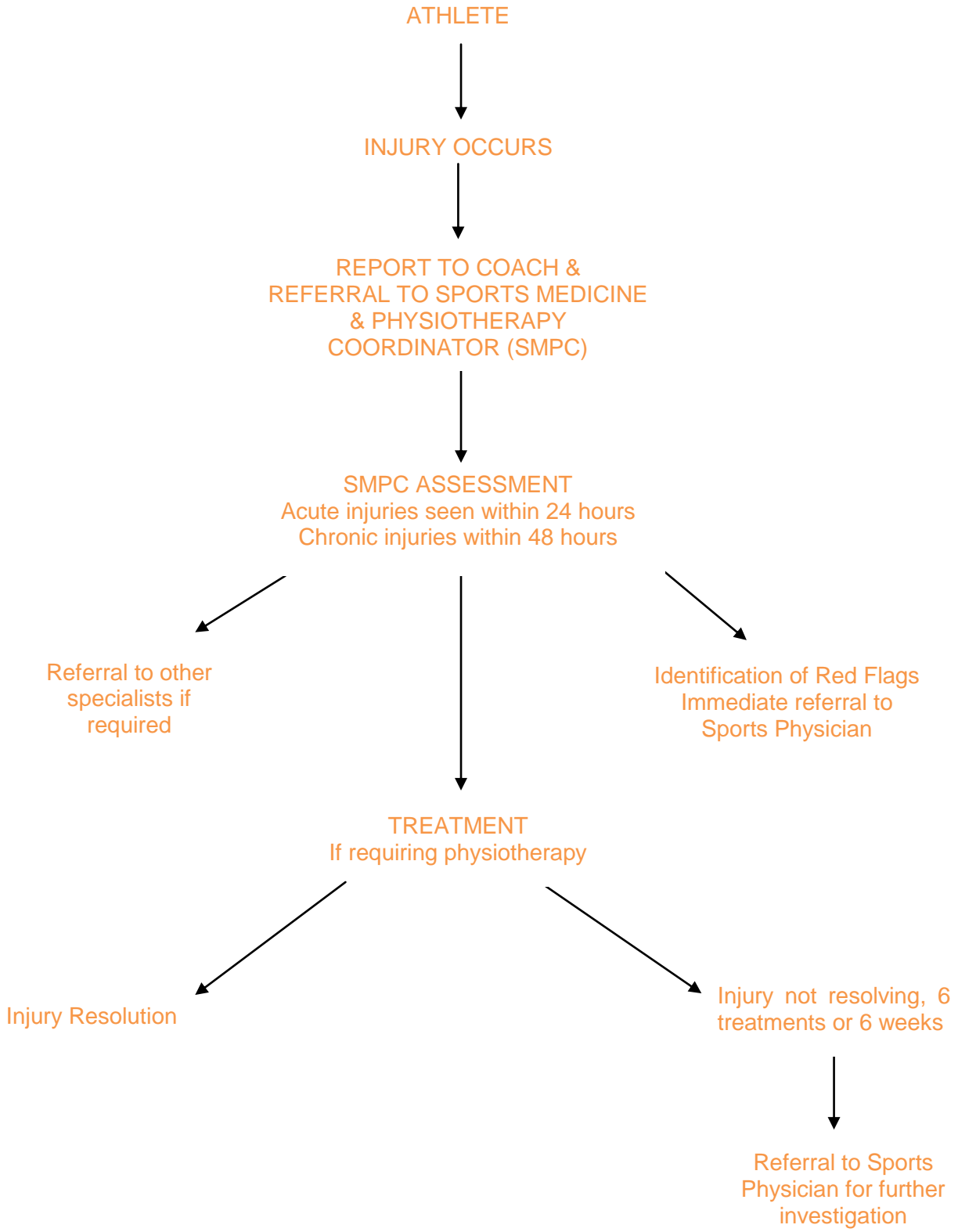
The NTIS has its own Sports Medicine and Physiotherapy Coordinator who is an Australian registered Physiotherapist. Appointments with the NTIS Sports Medicine and Physiotherapy Coordinator are available for Level 1-4 NTIS scholarship holders between 3 and 7pm on weekdays by contacting (08) 8922 6829, unless otherwise notified. The higher scholarship holders receive priority for appointments with the NTIS Sports Medicine and Physiotherapy Coordinator unless intervention of a greater medical attention is required. This is the discretion of the NTIS Sports Medicine and Physiotherapy Coordinator.

Level 5 NTIS scholarship holders are provided educational sessions from the NTIS Sports Medicine and Physiotherapy Coordinator periodically during the term of their scholarship to better understand and prepare them for training, competition or injury/illness.

## **INJURY MANAGEMENT**

When the Level 1-4 NTIS scholarship holders presents to the NTIS Sports Medicine and Physiotherapy Coordinator for an injury or assessment, they will be examined and an appropriate management plan will be outlined depending upon their condition. For general medical conditions the athlete will be referred to the GP for management. Specific sporting conditions that require medical intervention will be referred to a Sports Physician. Conditions that require physiotherapy management will be performed by the NTIS Sports Medicine and Physiotherapy Coordinator. Conditions that require the services of other allied health staff eg. podiatry, optometry; will be referred to as necessary.

### INJURY MANAGEMENT FLOW CHART



## **SINGLE SPORT POLICY**

Any injury that occurs while participating in a sport or activity not sanctioned by the athlete's Head Coach is not covered under the NTIS athlete agreement. These injuries need to be managed at the athlete's own cost.

Should this occur the athlete is required to:

- a) Notify the NTIS Sports Medicine and Physiotherapy Coordinator of the injury and its actual mechanism.
- b) Seek treatment from an external medical provider.
- c) Upon completing treatment ensure that the NTIS Sports Medicine and Physiotherapy Coordinator is provided with a medical clearance report from the treating practitioner regarding that injury.
- d) Undergo a musculoskeletal screening with the NTIS Sports Medicine and Physiotherapy Coordinator prior to returning to NTIS commitments.

Failure to comply may result in sanctions under the NTIS Behaviour and Disciplinary Action policy.

## **ALTERNATIVE HEALTH PRACTITIONERS**

It is NTIS policy not to recommend NTIS athletes to attend practitioners who sit outside the traditional sports medicine model eg. chiropractic, osteopathy, acupuncture, traditional Chinese medicine etc.. As such no reimbursement is available to athletes who receive any of these forms of treatment.

Should the athlete decide to seek alternative therapy they need to inform the NTIS Sports Medicine and Physiotherapy Coordinator about any other form of therapy they are receiving for any sports related injury. Should this alternative treatment conflict with any treatment or management program prescribed by the NTIS Sports Medicine and Physiotherapy Coordinator, they will receive a letter requesting justification for the alternative treatment. NTIS senior management and the NTIS Sports Medicine and Physiotherapy Coordinator will consider the athlete's response and determine the injury management plan.

## **ALLIED HEALTH PRACTITIONERS**

While the NTIS currently has no preferred practitioners for podiatry, dentistry, optometry or massage therapy, potential relationships will be investigated in 2011/12. Should an athlete require these services they are free to choose this practitioner. However it is requirement the athlete provides the NTIS Sports Medicine and Physiotherapy Coordinator with details of any consultations, if relevant to the athletes' scholarship, for their medical records.

## **INJURY MANAGEMENT BY CLUB PERSONNEL**

If an injury occurs whilst training or competing for the athletes club the athlete should seek immediate acute management from any club medical personnel. They should report the outcomes of this management as soon as possible to the NTIS Sports Medicine and Physiotherapy Coordinator.

If this injury requires any follow up treatment they must be assessed by the NTIS Sports Medicine and Physiotherapy Coordinator and an injury rehabilitation/management plan will be designed.

This plan will be communicated to club personnel, who may be involved in the injury management process. It is the NTIS SMPC who oversees this process and ultimately determines the treatment plan.

Should club personnel not adhere to this plan the athlete is not to follow their advice. Should the athlete choose to ignore the advice of the NTIS Sports Medicine and Physiotherapy Coordinator it will result in an informal warning. A second offence will lead to a formal warning and a third offence will result in suspension of NTIS Sports Medicine and Physiotherapy Coordinator services for 3 months.

## **POST SCHOLARSHIP INJURY MANAGEMENT POLICY**

Any injury sustained by an NTIS athlete after their scholarship term has ceased is not covered under the scholarship agreement. These injuries will need to be managed at the athlete's own cost.

If an athlete has been injured during the of their NTIS scholarship agreement, the athlete is entitled to the NTIS Sports Medicine and Physiotherapy Coordinator services, as allowed for by their scholarship agreement, until the injury has resolved. This management may therefore by necessity continue past the end of the scholarship term.

If an athlete is being managed for a long-term injury, continuation of treatment will be negotiated on a case-by-case basis between the NTIS and the athlete, under the advice of appropriate NTIS service providers, the NTIS coach and the NTIS Sports Medicine and Physiotherapy Coordinator. Services agreed upon will be detailed in the schedule of the Injured Athlete Scholarship Agreement. All athletes requiring post scholarship management will be required to sign the Injured Athlete Scholarship Agreement.

## **RESPONSIBILITIES:**

### **ATHLETE**

1. To ensure immediate reporting of an injury to the NTIS staff member who is present.
2. To ensure prompt and accurate reporting to the squad coach as to the time, place and mechanism of any injury that occurs.
3. To provide the NTIS Sports Medicine and Physiotherapy Coordinator and external sports medicine service providers with all relevant information in respect to the injury as required by the athlete agreement.
4. To ensure prompt signing and return of the injured athlete agreement

### **COACH**

1. To ensure the athlete seeks prompt advice and management for the injury.
2. To ensure that the NTIS Sports Medicine and Physiotherapy Coordinator is promptly informed of the injury and kept informed throughout the management and return to sport program.
3. To assist and oversee any rehabilitation programs implemented for an athlete.

### **SPORTS MEDICINE CO-ORDINATOR**

1. To provide advice or assistance with respect to prognosis and management that the injury may require.
2. To provide injury treatment as required

## **COACH ATHLETE PROGRAM MANAGEMENT**

1. To ensure the coach and athlete is aware of and undertakes their responsibilities.
2. Manager Sport Programs to facilitate and manage administrative issues of the rehabilitation process for the athlete and NTIS, including the documentation of the injured athlete agreement.

## **SOUTHERN REGION ATHLETES NTIS APPROVED PRACTITIONERS**

Southern region NTIS athletes are required to use nominated NTIS physiotherapists if they want to be reimbursed for medical costs. If they do not use a NTIS nominated physiotherapist no expenses will be covered.

A physiotherapist may become a NTIS approved physiotherapist if they meet 2 of the 4 following criteria.

1. A Masters degree in Sports, Musculoskeletal or Manipulative therapy
2. Be an APA titled Sports or Musculoskeletal Physiotherapist
3. Has had experience working with international or national level athletes previously
4. Has greater than 5 years experience as a physiotherapist in outpatients musculoskeletal physiotherapy

Southern region athletes will be notified of the names and contact details of these therapists.

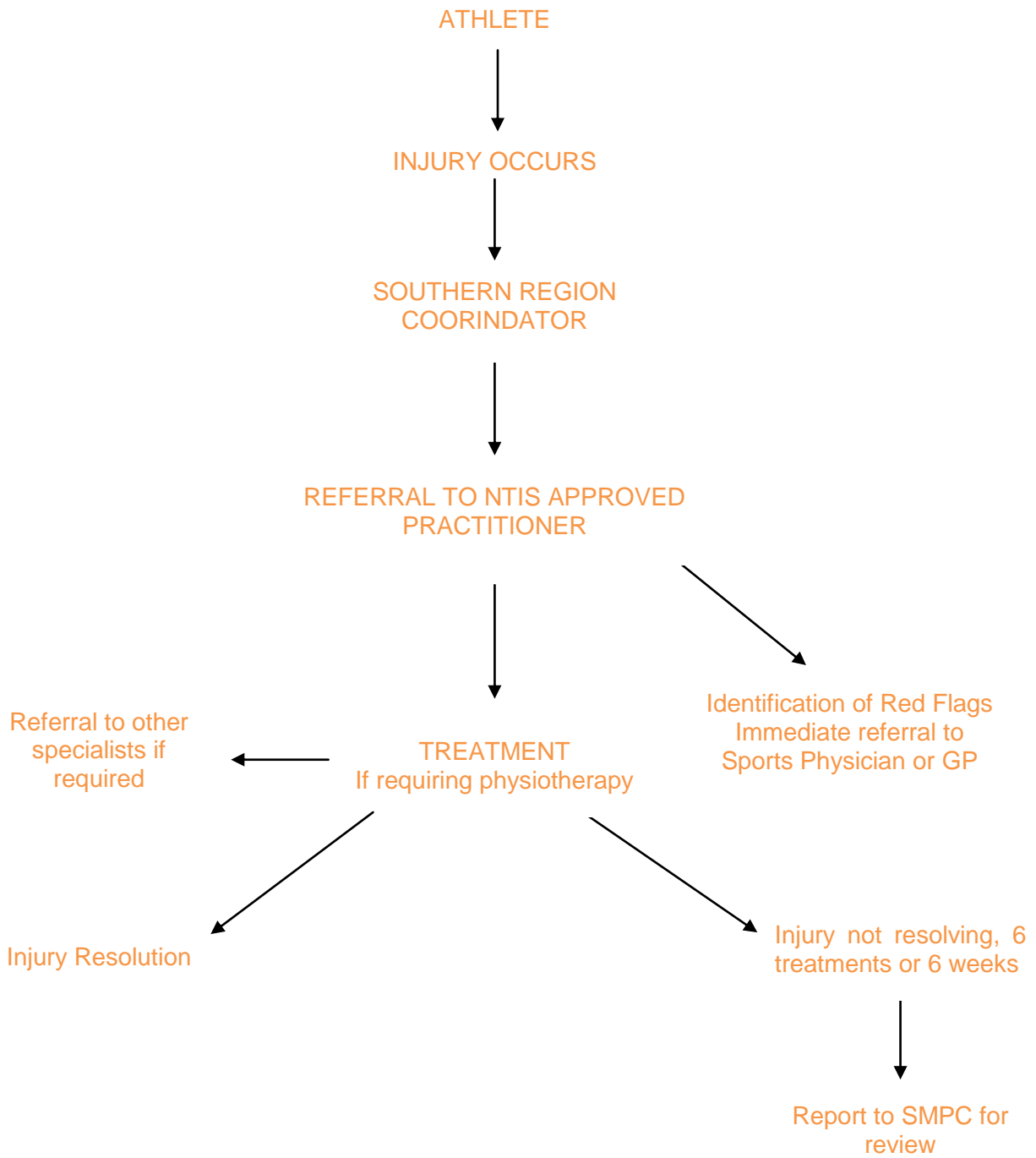
Medical clearance, Pre-existing injuries and exit screening procedures are the same as for Darwin based athletes.

## **INJURY MANAGEMENT**

The athlete must report any injury or condition to the Southern region coordinator. They will then be referred to their GP or an NTIS nominated physiotherapist for management of this condition as required. See injury management flowchart for Southern region. After each consultation the treating practitioner is required to complete an injury report and return it to the Southern region coordinator and the NTIS Sports Medicine and Physiotherapy Coordinator.

If the condition is requiring more than 6 consultations the treating practitioner needs to complete a more detailed report to the NTIS Sports Medicine and Physiotherapy Coordinator. This report should outline the diagnosis of the condition, contributing factors, the treatment being performed, any rehabilitation requirements, the prognosis and estimated number of consultations required. Upon receiving the report it is up to the NTIS Sports Medicine and Physiotherapy Coordinator discretion as to whether further treatment is supported financially.

### SOUTHERN REGION INJURY MANAGEMENT FLOW CHART



### **REIMBURSEMENT FOR PHYSIOTHERAPY COSTS**

The athlete is required to pay the full amount of the account themselves and claim any private health insurance rebate they are entitled to. They must then send the receipt to the NTIS Sports Medicine and Physiotherapy Coordinator. The NTIS Sports Medicine and Physiotherapy Coordinator will then approve reimbursement for the amount allocated on the schedule of services, if the claim is eligible.

The NTIS is not to be billed directly for any athlete regardless of their scholarship level for any treatment costs.

### **EXTERNAL PRACTITIONERS**

This does not apply for Southern region athletes.

### **POST SCHOLARSHIP INJURY MANAGEMENT**

This is the same as for Darwin based athletes.

Miscellaneous policies – iron levels, drugs in sport, mouthguards, head injuries, blood borne viruses are the same as for Darwin based athletes.

## **FAILURE TO COMPLY WITH SPORTS MEDICINE AND PHYSIOTHERAPY COORDINATOR RECOMMENDATIONS**

Failure to comply with SMPC recommendations may result in suspension of NTIS Sports Medicine services to the athlete. Failure to comply with recommendations include failure to attend appointments without notifying the NTIS Sports Medicine and Physiotherapy Coordinator, failure to attend appointments with external practitioners, failure to follow treatment and management requests.

A three strikes rule will apply.

1. The first breach will result in an informal warning to the athlete and notification to the NTIS Head Coach.
2. A second breach will result in a formal warning via a letter sent to the athlete and notification to the NTIS Head Coach.
3. A third breach will result in suspension of NTIS sports medicine services for a period of three months. At the end of this period the athlete will need to be medically cleared prior to resumption of NTIS Sports Medicine services.

## **BLOOD BORNE VIRUSES POLICY**

Blood borne viruses are those viruses that are transmitted from the blood of one person to the blood of another person. Of particular concern in sport are Hepatitis B, C and HIV. Currently there is an effective vaccination available for Hepatitis B, but not for C or HIV. The NTIS follows the recommendations of Sports Medicine Australia (SMA) and the Australian National Council on AIDS, Hepatitis C and Related Diseases (ANCAHRD), and strongly recommends athletes, coaches and service providers who are at risk of becoming in contact with blood or other body fluids of a competitor to be vaccinated against Hepatitis B. In line with this recommendation, the NTIS will fund the three-injection vaccination course, required to gain protection against Hepatitis B, for any elite and elite development scholarship holder, coach or service provider who indicates they wish to and have not previously been vaccinated. Parental permission will be required for athletes under the age of 18.

The NTIS requires all coaches and service providers to attend an initial education session to ensure current knowledge and awareness with respect to transmission risks, minimisation strategies and familiarisation with NTIS policy and procedures, in relation to blood borne viruses. Attendance at a refresher / update session is recommended on an annual basis. The NTIS requires all athletes to attend one education session per year, which will promote awareness and prevention strategies for contracting blood borne viruses. Parents / guardians of athletes will be strongly advised to attend. The NTIS encourages all athletes, coaches and service providers to practise risk prevention strategies in their daily non-sporting activities, to minimise the risk of transmission during their sporting activities. All athletes, coaches and service providers must strictly follow the NTIS blood rules, shown at end of policy document, to help minimise the risk of transmitting a blood borne virus.

## **PROCEDURE**

At the commencement of each scholarship year the NTIS will fund the three-injection course for Hepatitis B vaccination for all elite and elite development athletes who indicate they wish to be vaccinated. Coaches and service providers who have not previously been vaccinated will be offered vaccination at this time. Education sessions to promote awareness and strategies to prevent risk of transmission will be conducted at the commencement of each scholarship year. Educational update sessions will be run annually for coaches and service providers.

## **RESPONSIBILITIES**

### **COACH:**

1. To ensure the *athlete* education session on blood borne viruses and prevention of transmission is conducted for their squad.

### **COACH ATHLETE PROGRAM MANAGEMENT:**

1. To ensure the *coach* education program is conducted.

### **SPORTS MEDICINE CO-ORDINATOR:**

1. To assist the coach and CAP management with the provision of coach and athlete education as requested, in terms of accessing resources.
2. To provide coach and athlete with information regarding the procedures, and assist with the arrangements, for athletes to receive Hepatitis B immunisation.
3. To advise the coach and CAP management with respect to any policy or procedural issues.
4. To advise any non-vaccinated elite and elite development of their scholarship entitlement.

## **BLOOD RULES**

Taken from *Blood Rules, OK* (SMA 2001) and ANCAHRD Bulletin no. 19 June 2001

- a) All pre-existing wounds must be adequately covered during training and competition
- b) An athlete who is bleeding or has blood on their clothes must leave the playing / training area immediately and seek first aid or medical attention
- c) The bleeding must be stopped, the wound dressed and any blood cleaned from the clothing and body parts before the athlete may return to the playing / training area
- d) If blood spills on to the playing / training surface, activity must be stopped until all blood is cleaned from the area
- e) Wear gloves
- f) Mop up any excess spill with a paper towel and dispose of in a plastic bag
- g) Clean the surface with warm water and detergent or soap
- h) Disinfect the surface by washing with a solution of 1 part household bleach, containing 5.25% sodium hypochlorite, and 9 parts water, and dry with a clean paper towel
- i) Discard all rubbish in a plastic bag
- j) Plastic bags containing blood soiled items must be disposed of by incineration
- k) Direct contact with the blood or body fluid of another person should be avoided at all times,
- l) New gloves must be worn for each incident
- m) Any towels or equipment covered with blood should be either disposed of in a plastic bag or stored in a plastic bag in readiness for cleaning as per the guidelines after the session
- n) If someone else's body fluid or blood comes into contact with you or another person, the following precautions are recommended:
  - o) Contact with an open wound wash the area thoroughly with soap and warm water
  - p) Contact with mouth or eyes rinse very well with water
  - q) See your doctor as soon as possible for further advise and management
  - r) If equipment or clothing gets blood spilled on to it,
    - s) Wash the item in cold water first then in hot water with detergent

## **MOUTHGUARDS POLICY**

Despite widespread support in the sports community for the use of mouthguards in injury prevention, randomised controlled trials assessing the effectiveness of mouthguards have not been reported in the literature. Currently Sports Medicine Australia (SMA) recommends that athletes involved in contact and collision sports wear custom-made mouthguards for training and competition. The recommendation is that athletes wear custom made mouthguards rather than the boil and bite version, which are considered by some to be less effective in injury prevention.

The NTIS believe it is wise to follow the recommendation of SMA and therefore strongly recommends that athletes in collision and contact sports wear mouthguards for competition and training to reduce the severity of orodental injury. In view of this NTIS recommendation, an athlete who sustains an orodental injury whilst not wearing a mouthguard will not be eligible for any financial assistance to which they are entitled under their scholarship agreement for management of that injury.

## **RESPONSIBILITIES COACH**

1. To ensure the athlete is aware of the NTIS mouthguard policy.
2. To educate and strongly advise athletes involved in contact or collision sports to wear mouthguards.
3. To assist athletes within their squad obtain a new or replacement.

## **SPORT PROGRAM MANAGEMENT**

1. To ensure the coach is aware of and undertakes their responsibilities.

## **SPORTS MEDICINE CO-ORDINATOR**

1. To advise the coach re any policy or procedural issues.
2. To inform the coach of any special fitting arrangements that is available to NTIS athletes, such as group discounts at certain dentists.

## **POLICY FOR THE TESTING AND MANAGEMENT OF IRON AND FERRITIN LEVELS IN ATHLETES**

### **POLICY**

Certain groups within the general population are considered to be at increased risk of developing iron deficiency. These groups include athletes who undertake intensive training programs. It is therefore desirable that such athletes have regular testing of their iron and ferritin levels to ensure that they retain adequate levels.

The normal range for serum iron is 10-30 $\mu$ mol/l for males and females. The normal range for ferritin is 40 to 350 $\mu$ g/l for males and 15 to 150 $\mu$ g/l for females. However it is currently considered highly desirable for athletes involved in intensive exercise programs to present with serum ferritin levels above 100 $\mu$ g/l. In view of the current information available it is NTIS policy to consider a serum ferritin level below 100 $\mu$ g/l as low. Athletes who present with low levels must be prescribed iron supplementation in keeping with the NTIS policy guidelines.

The following NTIS athletes are considered to be at an increased risk of developing low iron and ferritin levels.

- a) All swimmers and cyclists
- b) All female athletes undertaking 5 or more sessions per week
- c) Any athlete who is identified by their diet or medical screening to be at risk of iron deficiency.

Athletes who fall into the above categories will therefore undergo a full blood examination (FBE) and testing of serum iron and ferritin as per policy procedures.

### **POLICY GUIDELINES**

If FBE, iron and ferritin (above 100 $\mu$ g/l) are all within normal ranges,

- Athletes will require no iron supplements and their iron studies will be rechecked at 6 months.

If FBE and iron studies are normal, but ferritin is low, (below 100 $\mu$ g/l):

- a) The athlete will be prescribed iron supplements by their medical practitioner.
- b) Iron studies will be re-checked at 8 weeks.
- c) Once ferritin levels have returned to normal the athlete will not be required to continue on iron supplementation and iron studies will be repeated in 3 months.
- d) If levels remain below normal the athlete will be required to continue on supplementation and iron studies will be repeated in 6 weeks.
- e) The athlete will receive nutritional education.

If FBE is normal, but iron (below 10 $\mu$ mol/l) and ferritin (below 100 $\mu$ g/l) studies are low:

- a) The athlete will be prescribed iron supplements by their medical practitioner.
- b) Iron studies will be re-checked at 8 weeks.
- c) Once iron and ferritin levels have returned to normal the athlete will not be required to continue on iron supplementation and iron studies will be repeated in 3 months.
- d) If levels remain below normal the athlete will be required to continue on supplementation and iron studies will be repeated in 6 weeks.

- e) The athlete will receive nutritional education.

If FBE, iron (below 10µmol/l) and ferritin (below 100µg/l) studies are all low:

- a) The athlete will be prescribed iron supplements by their medical practitioner.
- b) The athlete's training volume and intensity will be reduced.
- c) Iron studies will be re-checked at 8 weeks.
- d) Once iron and ferritin levels have returned to normal the athlete will not be required to continue on iron supplementation and iron studies will be repeated in 3 months.
- e) If levels remain below normal the athlete will be required to continue on supplementation and iron studies will be repeated in 6 weeks.
- f) The athlete will receive nutritional education.
- g) Return to normal levels of exercise intensity and volume will only occur once the treating medical practitioner is satisfied that the athlete's health is not at risk and their FBE and iron studies return normal values as indicated above.

## **PROCEDURE**

All athletes within the at risk groups will be tested immediately prior to the commencement of each program year, then as required by the policy guidelines. Results of blood tests will be sent to the requesting medical practitioner with a copy to the NTIS Sports Medicine Co-ordinator. Athletes are required to see the practitioner who requests the tests for follow-up and advice. Failure for study levels to improve on re-testing will necessitate further investigations and alternative management as decided appropriate by the treating medical practitioner. All athletes presenting with a low iron or ferritin level will receive nutritional education.

## **RESPONSIBILITIES**

### **COACH**

1. To ensure the athlete has their blood tests done promptly as per policy guidelines and procedures.
2. To ensure the athlete makes the appropriate follow-up visits with the medial practitioner.

### **SPORT PROGRAMS MANAGER**

1. To ensure the coach is aware of and undertakes their responsibilities.

### **SPORTS MEDICINE CO-ORDINATOR**

1. To advise the coach re any policy or procedural issues.
2. To inform the coach of those athletes who require follow-up visits with their medical practitioner and / or repeat iron studies.

## CONCUSSION AND HEAD INJURIES

The NTIS policy on concussion in sport is based on the summary and agreement statement from the 2<sup>nd</sup> international conference on concussion in sport, held in Prague, 2004. A full transcript is available from the British Journal of Sports Medicine (2005) volume 39 pages 196-204. The key points of that statement are presented here.

### DEFINITION OF CONCUSSION

“Sports concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces”. Several common features that incorporate clinical, pathological, and biomechanical injury constructs that may be used in defining the nature of a concussive head injury include the following.

1. Concussion may be caused by a direct blow to the head, face, neck, or elsewhere on the body with an “impulsive” force transmitted to the head.
2. Concussion typically results in the rapid onset of short lived impairment of neurological function that resolves spontaneously.
3. Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than structural injury.
4. Concussion results in a graded set of clinical syndromes that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course.

Concussion is typically associated with grossly normal structural neuroimaging studies.

### CLASSIFICATION OF CONCUSSION

#### SIMPLE CONCUSSION

In simple concussion, an athlete suffers an injury that progressively resolves without complication over 7–10 days. In such cases, apart from limiting playing or training while symptomatic, no further intervention is required during the period of recovery, and the athlete typically resumes sport without further problem. Formal neuropsychological screening does not play a role in these circumstances, although mental status screening should be a part of the assessment of all concussed athletes. Simple concussion represents the most common form of this injury and can be appropriately managed by primary care physicians or by certified athletic trainers working under medical supervision. The cornerstone of management is rest until all symptoms resolve and then a graded programme of exertion before return to sport. All concussions mandate evaluation by a medical doctor.

#### COMPLEX CONCUSSION

Complex concussion encompasses cases where athletes suffer persistent symptoms (including persistent symptom recurrence with exertion), specific sequelae (such as concussive convulsions), prolonged loss of consciousness (more than one minute), or prolonged cognitive impairment after the injury. This group may also include athletes who suffer multiple concussions over time or where repeated concussions occur with progressively less impact force. In this group, there may be additional management considerations beyond simple return to play advice. Formal neuropsychological testing and other investigations should be considered in complex concussions. It is envisaged that such athletes would be managed in a multidisciplinary manner by doctors with specific expertise in the management of concussive injury such as a sport medicine doctor with experience in concussion, sports neurologist, or neurosurgeon.

## PRE-PARTICIPATION PHYSICAL EXAMINATION

A structured concussion history should include specific questions as to previous symptoms of a concussion, not just perceived number of past concussions. It is also worth noting that dependence on the recall of concussive injuries by team mates or coaches has been shown to be unreliable. The clinical history should also include information about all previous head, face, or neck injuries, as these may have clinical relevance to the present injury. It is worth emphasising that, with maxillofacial and neck injuries, co-existent concussive injuries may be missed unless specifically assessed. Specific questions pertaining to disproportionate impact versus symptom severity matching may alert the clinician to a progressively increasing vulnerability to injury. As part of the clinical history, it is advised that details on protective equipment used at the time of injury be sought, both for recent and remote injuries. The benefit of this approach allows modification and optimisation of protective behaviour and an opportunity for education. It is specifically recommended that:

Both a baseline cognitive assessment (such as the Prague SCAT test in the absence of computerised neuropsychological testing) and symptom score is performed as part of the pre-participation evaluation;

Although formal baseline neuropsychological screening may be beyond the resources of many sports or individual athletes, it is recommended that, in organised high risk sports, consideration be given to having cognitive evaluation regardless of the age or level of performance.

## SIGNS AND SYMPTOMS OF ACUTE CONCUSSION

The suspected diagnosis of sports concussion made on the sideline is applicable to both medical and non-medical personnel and can include clinical symptoms, physical signs, cognitive impairment, and/or loss of consciousness.

If any one of the following symptoms or problems is present, a head injury should be suspected and appropriate management instituted. These will be summarised on the sideline concussion assessment tool (SCAT) that accompanies this document (Appendix 2.1 and 2.2).

### (a) Cognitive features (see below)

- Unaware of period, opposition, score of game
- Confusion
- Amnesia
- Loss of consciousness

(b) Typical symptoms (see SCAT (Appendix 2.1 and 2.2) for standard symptom scale); other symptoms such as a subjective feeling of slowness and fatigue after an impact may indicate that a concussion has occurred or has not fully resolved

- Headache or pressure in the head
- Balance problems or dizziness
- Nausea
- Feeling “dinged”, “foggy”, stunned, or “dazed”
- Visual problems—for example, seeing stars or flashing lights, double vision
- Hearing problems—for example, ringing in the ears
- Irritability or emotional changes

### (c) Physical signs

- Loss of consciousness/impaired conscious state
- Poor coordination or balance
- Concussive convulsion/impact seizure

- Gait unsteadiness/loss of balance
- Slow to answer questions or follow directions
- Easily distracted, poor concentration
- Displaying inappropriate emotions—for example, laughing, crying
- Vomiting
- Vacant stare/glassy eyed
- Slurred speech
- Personality changes
- Inappropriate playing behaviour—for example, running in the wrong direction
- Significantly decreased playing ability

## IMMEDIATE CONCUSSION EVALUATION

Sideline evaluation of cognitive function is an essential component in the assessment of this injury. It is recommended that all NTIS coaches and support staff be aware of the Sports Concussion Assessment Tool. A copy of this is found in the Appendix 2.1 and 2.2. If any evidence suggests the presence of concussion the athlete needs to be evaluated by medical personnel immediately. They are not to be left alone and should be monitored for deterioration.

## CONCUSSION MANAGEMENT

### ACUTE INJURY

When a player shows any symptoms or signs of a concussion, the following process should be applied.

1. The player should not be allowed to return to play in the current game or practice.
2. The player should not be left alone, and regular monitoring for deterioration is essential over the initial few hours after injury.
3. The player should be medically evaluated after the injury.
4. Return to play must follow a medically supervised stepwise process.

A player should never return to play while symptomatic. “When in doubt, sit them out!”

### RETURN TO PLAY PROTOCOL

As described above, most injuries will be simple concussions, and such injuries recover spontaneously over several days. In these situations, it is expected that an athlete will proceed rapidly through the stepwise return to play strategy. During this period of recovery in the first few days after an injury, it is important to emphasise to the athlete that physical and cognitive rest is required. Activities that require concentration and attention may exacerbate the symptoms and as a result delay recovery.

The return to play after a concussion follows a stepwise process:

1. No activity, complete rest. Once asymptomatic, proceed to level 2.
2. Light aerobic exercise such as walking or stationary cycling, no resistance training.
3. Sport specific exercise—for example, skating in hockey, running in soccer; progressive addition of resistance training at steps 3 or 4.
4. Non-contact training drills.
5. Full contact training after medical clearance.
6. Game play.

With this stepwise progression, the athlete should continue to proceed to the next level if asymptomatic at the current level. If any post-concussion symptoms occur, the patient should drop back to the previous asymptomatic level and try to progress again after 24 hours. In cases of complex concussion, the rehabilitation will be more prolonged, and return to play advice will be more circumspect. It is envisaged that complex cases should be managed by doctors with a specific expertise in the management of such injuries.

An additional consideration in return to play is that concussed athletes should not only be symptom-free but also should not be taking any pharmacological agents/drugs that may affect or modify the symptoms of concussion.

## **PREVENTION**

There is no clinical evidence that currently available protective equipment will prevent concussion. In certain sports, protective equipment may prevent other forms of head injury which may be an important issue for those sports.

An important consideration in the use of protective equipment is the concept of risk compensation. This is where the use of protective equipment results in behavioural change such as the adoption of more dangerous playing techniques, which can result in an increase in injury rates.

## **RECOMMENDATIONS**

### **ATHLETE**

1. Attend concussion education session if involved in high risk sports
2. Complete any pre-participation testing at the start of their scholarship year. This needs to be updated yearly.
3. If suspicious a team mate has concussion notify the head coach immediately

### **COACH**

1. All coaches need to be familiar with the concussion policy statement
2. If an athlete displays any symptoms of concussion get them complete SCAT A
3. If medical personnel are available immediately refer the athlete to them and have them complete SCAT B
4. If medical personnel are not immediately available transport them to nearest available medical personnel. Do not leave the athlete alone and monitor them closely
5. Once reviewed and cleared by medical personnel follow the return to sport guidelines found in the concussion policy statement.
6. Do not allow any athlete to return to sport until they have completed the return to play process.

### **SPORTS MEDICINE AND PHYSIOTHERAPY COORDINATOR**

1. Ensure all coaches and Athlete Services staff are aware of the head injury/concussion policy and that this is updated yearly.
2. Ensure all athletes involved in at risk sports are aware of the policy and have completed pre-participation testing.
3. Be available to give any advice on the management of athletes with concussion or suspected concussion

### **SPORT PROGRAMS MANAGER**

1. Ensure all coaching staff and athletes in their programs have attended concussion education sessions and implement the policy.

### **ATHLETE EDUCATION**

- Athlete education sessions are drafted into the sports medicine service operation plan with all squads. Prior to the commencement of the new program year.
- The SMPC and coach plan these sessions based upon areas highlighted as requiring sports medicine input by the coach and sports medicine providers.
- These sessions are designed to cover specific injury concerns related to their sport
- Generic education sessions are not included in the sessions. They are available to all athletes and ideally will be completed in the athletes first year on scholarship
- Either the NTIS SMPC or external practitioner will conduct these sessions, as deemed appropriate by the squad coach and SMC. Payment for any external practitioner in the responsibility of the sports program.

### **RESPONSIBILITIES**

#### **COACH**

1. To discuss with the SMPC any specific education sessions they want delivered to the squad during the SOP planning meeting
2. To ensure all athletes are aware of and attend any education sessions

#### **SPORTS MEDICINE AND PHYSIOTHERAPY COORDINATOR**

1. To discuss with the coach any relevant education sessions the sport program may require
2. To coordinate the presentation of any education sessions as required

## Appendix 1. Schedule of Sports medicine services for reimbursement

Funding for IAS athletes' private health membership inclusive of hospital cover is available out of your scholarship budget

Coverage is based on your scholarship type	LEVEL 1-4 Scholarship	LEVEL 5 Scholarship
<b>SCREENINGS</b>		
> Pre- entrance – Medical screening	Athlete to Cover	Athlete to Cover
> - Physio (musculo-skeletal screenings)	NTIS Cover	Not Applicable
<b>PHYSIOTHERAPY</b>		
>NTIS Physio Consultation, Regional & Interstate consultation	NTIS Cover	No Cover
Darwin external physio consultation if <b>not</b> referred from NTIS NTIS Physiotherapist/ Manager Athlete Services	No Cover	No Cover
Darwin external physio consultation if referred from NTIS NTIS Physiotherapist/ Manager Athlete Services	Case by case	No Cover
Equipment and braces	Case by case	No Cover
<b>DOCTOR SERVICES</b>		
GP, Sports Physician, Resident: Injury Management	Gap Payment	No Cover
> Injections- GP	Case by case	No Cover
> flu shot	Gap Payment	No Cover
<b>SURGERY</b> > Surgery costs	May receive Gap Payment	No Cover
<b>RADIOLOGY</b>		
> X-rays Ultra-sound Bone & CT Scan	Gap Payment	No Cover
> MRI	Case by case	No Cover
<b>PATHOLOGY</b>	Case by case	No Cover
<b>PODIATRY</b> - consultations	Gap Payment	No Cover
<b>MASSAGE</b> - during competition	Max \$300 Prior Approval required	No Cover
<b>ORTHOTICS</b>	NTIS Cover Gap Payment Competition and Training Budget	No Cover
<b>DENTAL, OPTICAL, PHARMACEUTICAL, ACUPUNCTURE, CHIROPRACTIC, REMEDIAL MASSAGE, AMBULANCE</b>	No Cover unless in writing	No Cover

Appendix 2.1 Sports Concussion Assessment Tool A – athlete card.

Appendix 2.2 Sports Concussion Assessment Tool B – medical evaluation.

**A**

This tool represents a standardized method of evaluating people after concussion in sport. This Tool has been produced as part of the Summary and Agreement Statement of the Second International Symposium on Concussion in Sport, Prague 2004

**Sports concussion** is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Several common features that incorporate clinical, pathological and biomechanical injury constructs that may be utilized in defining the nature of a concussive head injury include:

1. Concussion may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an 'impulsive' force transmitted to the head.
2. Concussion typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously.
3. Concussion may result in neuropathological changes but the acute clinical symptoms largely reflect a functional disturbance rather than structural injury.
4. Concussion results in a graded set of clinical syndromes that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course.
5. Concussion is typically associated with grossly normal structural neuroimaging studies.

**Post Concussion Symptoms**

Ask the athlete to score themselves based on how they feel now. It is recognized that a low score may be normal for some athletes, but clinical judgment should be exercised to determine if a change in symptoms has occurred following the suspected concussion event.

It should be recognized that the reporting of symptoms may not be entirely reliable. This may be due to the effects of a concussion or because the athlete's passionate desire to return to competition outweighs their natural inclination to give an honest response.




If possible, ask someone who knows the athlete well about changes in affect, personality, behavior, etc.

**Remember**, concussion should be suspected in the presence of ANY ONE or more of the following:

- Symptoms (such as headache), or
- Signs (such as loss of consciousness), or
- Memory problems

Any athlete with a suspected concussion should be monitored for deterioration (i.e., should not be left alone) and should not drive a motor vehicle.

**For more information** see the "Summary and Agreement Statement of the Second International Symposium on Concussion in Sport" in the: Clinical Journal of Sport Medicine 2005; xx(xx): xxx-x British Journal of Sports Medicine 2005; xx(xx): xxx-x Neurosurgery 2005; ; xx(xx): xxx-x Physician and Sportsmedicine 2005; xx(xx): xxx-x This tool may be copied for distribution to teams, groups and organizations.

**The SCAT Card**  
(Sport Concussion Assessment Tool)  
**Athlete Information**

**What is a concussion?** A concussion is a disturbance in the function of the brain caused by a direct or indirect force to the head. It results in a variety of symptoms (like those listed below) and may, or may not, involve memory problems or loss of consciousness.

**How do you feel?** You should score yourself on the following symptoms, based on how you feel now.

<i>Post Concussion Symptom Scale</i>						
	None	Moderate			Severe	
Headache	0	1	2	3	4	5 6
"Pressure in head"	0	1	2	3	4	5 6
Neck Pain	0	1	2	3	4	5 6
Balance problems or dizzy	0	1	2	3	4	5 6
Nausea or vomiting	0	1	2	3	4	5 6
Vision problems	0	1	2	3	4	5 6
Hearing problems / ringing	0	1	2	3	4	5 6
"Don't feel right"	0	1	2	3	4	5 6
Feeling "dinged" or "dazed"	0	1	2	3	4	5 6
Confusion	0	1	2	3	4	5 6
Feeling slowed down	0	1	2	3	4	5 6
Feeling like "in a fog"	0	1	2	3	4	5 6
Drowsiness	0	1	2	3	4	5 6
Fatigue or low energy	0	1	2	3	4	5 6
More emotional than usual	0	1	2	3	4	5 6
Irritability	0	1	2	3	4	5 6
Difficulty concentrating	0	1	2	3	4	5 6
Difficulty remembering	0	1	2	3	4	5 6

**(follow up symptoms only)**

Sadness	0	1	2	3	4	5 6
Nervous or Anxious	0	1	2	3	4	5 6
Trouble falling asleep	0	1	2	3	4	5 6
Sleeping more than usual	0	1	2	3	4	5 6
Sensitivity to light	0	1	2	3	4	5 6
Sensitivity to noise	0	1	2	3	4	5 6
Other: _____	0	1	2	3	4	5 6

**What should I do?**  
Any athlete suspected of having a concussion should be removed from play, and then seek medical evaluation.

**Signs to watch for:**  
Problems could arise over the first 24-48 hours. You should not be left alone and must go to a hospital at once if you:

- Have a headache that gets worse
- Are very drowsy or can't be awakened (woken up)
- Can't recognize people or places
- Have repeated vomiting
- Behave unusually or seem confused; are very irritable
- Have seizures (arms and legs jerk uncontrollably)
- Have weak or numb arms or legs
- Are unsteady on your feet; have slurred speech

Remember, it is better to be safe. Consult your doctor after a suspected concussion.

**What can I expect?**  
Concussion typically results in the rapid onset of short-lived impairment that resolves spontaneously over time. You can expect that you will be told to rest until you are fully recovered (that means resting your body and your mind). Then, your doctor will likely advise that you go through a gradual increase in exercise over several days (or longer) before returning to sport.

