Schools and Colleges General Information

Those involved in school sport have a very important role in the prevention and management of concussion as they are in a unique position:

- they have a statutory duty of care to their students
- they have regular, sometimes daily contact with their players
- the setting allows and supports opportunities for wider education around rugby and other sports
- teachers and lecturers are key influencers on their students attitudes and behaviour
- the setting should allow for the detection of missed concussions, including those occurring outside of the establishment, through the impact on educational activities
- the setting allows for monitoring of concussed players’ recovery
- some have employed or contracted healthcare professionals on site

Coaches in any setting have the most important role to play. Research in youth players has shown that young players rely on their coach to provide information on concussion and are influenced most in their behaviour towards concussion by their coach.

All coaches should be able to RECOGNISE suspected concussion and are in the best position to REMOVE the player from play

What is concussion?

Concussion is a disturbance of the normal working of the brain without there being any structural damage. It is usually caused by a blow directly to the head, or indirectly if the head is shaken when the body is struck. It is important to recognise that most concussions occur without there being any loss of consciousness.

Concussions can occur in many situations in the school environment; any time that a student’s head comes into contact with a hard object such as the floor, a desk, or another student's body. The potential is probably greatest during activities where collisions can occur such as in the playground, during sport and PE, and if messing around indoors during breaks. The nature of rugby means that concussion can occur in training and in matches.

Students may also get concussion when doing rugby or other activities out of school but come to school with the symptoms and signs. It is important that these situations are recognised as the concussion can affect their academic performance and /or behaviour, as well at putting them at risk of more serious consequences if they sustain another concussion before recovery.
**Is concussion serious?**

Most young people with concussion do not require any treatment as they normally get better by themselves and recover quickly, but for some the symptoms may last for days, weeks or in rare cases longer. If managed correctly, concussion rarely has serious consequences, however, they will require a period of careful monitoring, ranging from several days to several weeks, depending on the severity of the concussion.

The outlook for most cases of concussion is very good as the actual extent of damage to the brain is usually minimal and does not usually cause any long-term problems or complications. Most doctors would argue that the physical benefits of regularly taking part in contact sports outweigh the potential risks associated with concussion.

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**What is of some concern is that our research suggests that boys playing rugby at school or club frequently do not admit to being concussed. In our study of 16 - 18 year olds, although 66% felt a concussion was a serious injury, only 44% were aware that there were IRB Regulations that required them to stand down from playing for a period and gain medical clearance before returning to play. Of those who felt that they had been concussed in the preceding two seasons, worryingly, 66% of this group said that they did not leave the field after that concussion, and 38% said that they did not report their concussion to anyone, and only 10% said that they waited the stipulated 3 week IRB stand down before returning to play.**

Because the child or adolescent brain is still developing there is concern that a second concussion occurring before recovery of the first results in prolonged symptoms that can have a significant impact on the child. This is likely to be a problem where players are not admitting to being concussed. There are also reports that in extremely rare cases this second concussion if in close proximity to the first (particularly in the same game but also before recovery) may cause potentially fatal rapid brain swelling.

Although also extremely rare in sport, a blow to the head either direct or indirect may first appear to be concussion, but there is something more serious going on; such as a bleeding or swelling in or around the brain. Sometimes the symptoms of a more serious brain injury do not occur for several hours or possibly days after the initial injury has taken place. Advice on what to look out for is included below.

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**Concussion in Rugby**

The Rugby Football Union has been involved in and contributed to the development of current international guidelines on concussion management in sport and specifically in rugby. The guidelines have been developed utilising international research evidence and expert opinion, and there are some general principles that apply across sports:
Because there is considerable variation in the initial effects of concussion, and spontaneous recovery is often rapid (minutes to days), this could increase the potential for players to ignore concussion symptoms at the time of injury and/or return to play prior to full recovery, as indicated in our research.

In very rare circumstances this may result in a more serious brain injury or a prolonged recovery period.

Returning to play before complete resolution of the concussion exposes the player to the risk of recurrent concussions that can occur with ever decreasing forces. There are concerns that repeated concussion could shorten a player’s career, interfere with academic performance, and may have some potential to result in permanent neurological impairment.

This potential for serious injury and prolonged recovery emphasises the need for careful management at the time of injury, comprehensive medical assessment and structured follow-up until the concussion has fully resolved.

Players must be encouraged to be honest with themselves, coaching, and medical staff for their own protection. Our research shows that young players rely most on their coach for advice and guidance on concussion.

Coaches, Teachers and other adults involved in schools rugby therefore have pivotal roles in educating young players about concussion, and in making sure it is managed properly.

1. Concussion must be taken extremely seriously to safeguard the safety and long term health of young players.
2. Players suspected of having concussion must be removed from play and must not resume play in the same match, and until cleared to do so.
3. All players suspected of having concussion must be assessed by a healthcare professional.
4. Players suspected of having concussion or diagnosed with concussion must go through a graduated return to play protocol (GRTP).
5. Players must receive medical clearance before returning to play.
Prevention of concussion

Ideally we all want to prevent concussions occurring in the first place and there are some measures that can be taken during rugby training and games:

1. Ensure the playing or training area is safe, and the risk of serious head injury occurring is reduced:
   a. Check ground conditions - do not play or train if the ground is frozen or hard due to drought
   b. Ensure all posts and barriers on or close to the pitch are protected with appropriate padding

2. Ensure correct tackle technique is coached and performed consistently by all players. If the head of the tackler hits the ball carrier there is a significant risk of concussion and/or neck injury. Coaches should therefore ensure that all players are able to perform correct tackle technique consistently, and they should be corrected immediately if they do not. There are several resources that coaches can refer to, see rfu.com/TakingPart/Coach/CoachDevelopmentProgrammes/FoundationCourses

3. Explain the dangers of high, tip and spear tackles, and penalise them immediately if they occur. Similarly with tackling players in the air, jumping to catch the ball from kicks or lineouts. Falling from height increase the risk of concussion and neck injuries. In young players in particular, a zero tolerance approach should be taken.

Some of this is drawn from our injury research in schools rugby. This has shown that the head is the most commonly injured body part:

<table>
<thead>
<tr>
<th>Body Region Injured (Top 5 only)</th>
<th>Percentage of injuries (Top 5 only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>24%</td>
</tr>
<tr>
<td>Hand</td>
<td>13%</td>
</tr>
<tr>
<td>Knee</td>
<td>11%</td>
</tr>
<tr>
<td>Shoulder</td>
<td>11%</td>
</tr>
<tr>
<td>Ankle/heel</td>
<td>7%</td>
</tr>
</tbody>
</table>
The focus on the coaching of the tackle is also drawn from research, and our own study in schools’ rugby in common with other research confirms the tackle as the most frequent phase of play in injury causation (shown in the figure below).

To prevent recurrent concussions and the rare but potential risk of severe injury coaches must encourage players to report concussions that occur during games and training sessions, and to report concussions that occur out of school.

It is also essential that school and club coaches communicate if a player is concussed, and involve parents in this.

**Protective Equipment**

Rugby headguards **DO NOT** protect against concussion. They do protect against superficial injuries to the head such as cuts and grazes. This has been demonstrated in a number of research studies now. There is some evidence to suggest that they may increase risk taking behaviours in some players.

Mouth guards/gum shields do not protect against concussion either although they are strongly recommended in all players as they do protect against dental and facial injuries.
How to recognise concussion

It is not possible to prevent all concussions, it is imperative therefore that all those involved in rugby ensure that when they do occur that they are recognised and managed correctly. The common signs and symptoms indicating that a player may have concussion are listed below. If a player shows any of the signs described 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.

What to look out for in a player who has a blow to the head:

The key and more obvious things to look out for are:

- Loss of consciousness - players do not have to be knocked out to be concussed but loss of consciousness indicates that the brain function has been disturbed and the player has been concussed.
- Convulsion/fit - this is usually not like a epileptic fit and is often very short lived. It is usually a “stiff” posture the player goes into for a few seconds.
- Nausea or vomiting - feeling sick or being sick on the pitch
- Unsteady on legs - staggering around

Some more subtle things to look out for are:

- Inappropriate or unusual playing behaviour - the player may face the wrong way,
- Slowed reactions - this may present as frequent dropped ball or missing tackles in a player who would not normally do so. Slow responses to questions or instructions
- Vacant expression - a player who looks ‘lost’, the classic saying “the lights are on but there is nobody at home”
- Confusion/disorientation - not responding to calls, adopting wrong position

Things the player should be asked about or admit to:

- Headache
- Dizziness,
- “Feeling in a fog”
- Feeling “unwell”

If a player exhibits any of the above after a blow to the head, they have suspected concussion and MUST be removed from play and sent for assessment by a healthcare practitioner. This may require the player to go to a hospital emergency department.
This is not always easy, and players may not exhibit these signs or symptoms. Therefore any young player who receives a blow to the head should be checked for concussion. If they have no signs or symptoms, they may return to play but they should be kept a close eye on, as signs and symptoms may develop later in the game or training session.

If they do have any signs or symptoms, or if you are concerned, remove them for play and send them for assessment by a healthcare practitioner.

**IF IN DOUBT SIT THEM OUT**

**Checking the player:**

The RFU recommends that coaches use the Pocket Concussion Assistant which can be downloaded from the resources section of rfu.com/concussion. This highlights what to look out for and what to do if you suspect concussion. Qualified First Aiders and Health Care Professionals may use further tests to assess a player.

While concussion guidelines apply to all age groups, particular care needs to be taken with children and adolescents because their brain is still developing. Children under the age of 10 with suspected concussion should be assessed by a head injury specialist. Children and adolescents with suspected concussion MUST be referred to a healthcare practitioner immediately for initial assessment. They may also need additional specialist medical assessment.

**Possible danger signs in suspected concussion**

In rare cases, there may be something more serious going on that may initially seem to be a concussion. There are some danger signs to look out for which if found, the player should be taken to a hospital emergency department or the emergency services should be called as soon as possible. The danger signs to look out for:

- Drowsiness when normally awake or cannot be awoken
- A headache that is getting worse
- Weakness, numbness or decreases in coordination and balance
- Repeated vomiting or prolonged nausea
- Slurred speech, difficulty speaking or understanding
- Increasing confusion, restlessness or agitation
- Loss of consciousness
- Convulsions
- Clear fluid coming out of ears or nose
- Deafness in one or both ears
- Problems with eyesight
Things to look out for in school in a player who may have been or has been concussed:

Concussion or post-concussion symptoms can very non-specific manner. In particular it often mimics the early symptoms of a viral infection such as flu; with the patient complaining of feeling off-colour or generally unwell.

If a child feels unwell or unusual in the days following a head injury, concussion should be considered and medical advice sort. Other things to look out for in the school setting are:

- Drop in academic performance - difficulties with school work or problem solving
- Poor attention and concentration in class
- Unusual Drowsiness or sleeping in class suggesting sleep disturbance
- Inappropriate emotions
- Unusual irritability
- Feeling more nervous or anxious than usual

Summary of management of suspected concussion

If a player is injured and concussion is suspected then they should be managed as shown in Diagram 1 below (taken from the IRB Concussion Guidelines, drawn up with the assistance of international experts in sports concussion).

It is recognised that the medical/first aid cover at training and matches varies, so different circumstances are shown:

- A medical practitioner is a registered doctor of medicine e.g. GP or hospital doctor

- A health care practitioner is an appropriately-qualified and practising practitioner registered with the Health Professions Council who has been trained in the identification of concussion symptoms and the management of a concussed player e.g. physiotherapist, nurse, osteopath, chiropractor, or paramedic

- A non-medical practitioner is lay person trained in Emergency First Aid or First Aid (more details regarding first aid cover are available at rfu.com/firstaid).
All children and adolescents with suspected concussion must be assessed by a healthcare practitioner.
Return to play after concussion

Returning to play after concussion has historically been fairly ad hoc, and often based on a set time period i.e. three weeks. As understanding of concussion improves it is clear that there is significant variability in recovery from concussion. Subtle chemical changes in the brain can now be detected and more sophisticated scans and brain function tests are shedding more light on this.

What has become apparent is that return to play should be done on an individual basis and should reflect the level of medical expertise available. Ideally, the Medical Practitioner responsible for the child’s or adolescent’s healthcare will advise on and oversee the return to play process. However it is appreciated that not all GPs or School Doctors have a detailed understanding of this process and engaging NHS healthcare professionals in such a process can be very difficult. Coaches and/or parents may therefore find it useful to refer the doctor to this guidance and the resources for Medical Practitioners available at rfu.com/concussion. This guidance has been developed in consultation with experts in sports concussion.

In young players a very conservative Graduated Return To Play (GRTP) approach is recommended, and it is advisable to extend the amount of rest and the length of the graded re-introduction of exertion. As part of the process it is also prudent to consult with the young person’s academic teacher(s) or tutor to ensure that their academic performance has returned to normal. The school environment obviously helps with this liaison with educational experts.

Following a concussion or suspected concussion the management of a GRTP should be undertaken on a case by case basis and with the full cooperation of the player and their parents/guardians.

It is important that there is physical and cognitive rest until there are no remaining symptoms of concussion before the GRTP process is commenced. 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.

Where a school has on-site medical resources the GRTP process should be carried out by the school/club coach, and overseen by the School Doctor. Parents should where possible also be actively involved in the process. School Doctors should be encouraged to undertake the educational module on concussion on the IRB Website, which can be accessed via rfu.com/concussion.
A summary of the graduated return to play process is shown in Diagram 2 below. The Medical Practitioner may observe the player at each stage of the GRTP protocol but may also delegate the observation to another Healthcare Professional while remaining responsible for the overall management of the protocol.

(taken from IRB concussion guidelines irbplayerwelfare.com)
Before a player can commence the exercise elements of the GRTP they must be symptom free for a period of 24 hours (Level 1) before they can move to the next stage (Level 2).

Under the GRTP protocol, the player can proceed to the next stage if no symptoms or signs of concussion return.

The Sport Concussion Assessment Tool 3 (SCAT3) is a useful tool for Medical Practitioners to use for monitoring. An improved version of this, the SCOAT is now available and both can be downloaded from rfu.com/concussion.

Where possible and practicable to do so, all players should have a baseline SCAT 2 completed prior to the season starting, to aid diagnosis in the event of a suspected concussion and so that recovery can be monitored.

If it is not feasible for the coach to conduct Levels 1 - 3, this could be done by parents with appropriate guidance. Alternatively the protocol may simply be extended with each level being conducted by the coach or other PE staff during PE lessons, when they are able.

Where the player completes each stage successfully without any symptoms the player would normally take approximately one week to proceed through the full protocol, in children and adolescents however, taking longer is not a problem and in fact could be beneficial.

If any symptoms occur while progressing through the GRTP protocol, the player must consult with their medical practitioner before returning to the previous stage and attempting to progress again after a minimum 24-hour period of rest has passed without the presence of symptoms. After completion of Level 4 the player may resume full contact practice (Level 5) with Medical Practitioner approval.

On completion of Level 5 without the presence of symptoms, the player may return to playing in full contact rugby games (Level 6). This is summarised in Diagram 2 and details of the functional exercises undertaken at each level is provided in the following table (taken from the IRB Concussion Guidelines irbplayerwelfare.com).
<table>
<thead>
<tr>
<th>Rehabilitation stage</th>
<th>Functional exercise at each stage of rehabilitation</th>
<th>Objective of each stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No activity, minimum 24 hours following the injury where managed by a medical practitioner, otherwise minimum 14 days following the injury</td>
<td>Complete physical and cognitive rest without symptoms</td>
<td>Recovery</td>
</tr>
<tr>
<td>2. Light aerobic exercise during 24-hour period</td>
<td>Walking, swimming or stationary cycling keeping intensity, &lt;70% maximum predicted heart rate. No resistance training. Symptom free during full 24-hour period.</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>4. Non-contact training drills during 24-hour period</td>
<td>Progression to more complex training drills, e.g. passing drills. May start progressive resistance training. Symptom free during full 24-hour period.</td>
<td>Exercise, coordination, and cognitive load</td>
</tr>
<tr>
<td>5. Full Contact Practice</td>
<td>Following medical clearance participate in normal training activities</td>
<td>Restore confidence and assess functional skills by coaching staff</td>
</tr>
<tr>
<td>6. After 24 hours return to play</td>
<td>Player rehabilitated</td>
<td>Recovered</td>
</tr>
</tbody>
</table>

If a young player's concussion resulted from poor tackle technique, their coach must also ensure that this is corrected before return to play.

While schools should endeavour to involve the player's Medical Practitioner in the GRTP, there may be extreme situations where this is not achievable. In these situations if a player has diagnosed or suspected concussion that player must not return to play until at least the 21st day after the incident and should follow the GRTP process outlined in Diagram 3.

Parents, coaches, teachers and administrators associated with the player should insist on the guidelines being followed.

In the above situation the GRTP process may commence after a 14 day stand-down period from playing sport and/or training for sport and then only if there are no symptoms of concussion present. Ideally the process should be managed and observed by someone familiar with the player who could identify any abnormal signs displayed by the player.

Pocket SCAT 3 will assist the lay person managing the process, as it can be used as a check at each level of the GRTP.
If any symptoms or signs occur while going through the GRTP protocol, the player must be reassessed by a healthcare practitioner, and possibly referred for further medical assessment.

Once cleared to do so they may commence the protocol again at the stage at which he/she did not experience any symptoms after a minimum 24-hour period of rest has passed without symptoms.

After Level 4 the player must return to see their Medical Practitioner to confirm full recovery before return to full contact and play.

Adolescents and children must have clearance from a Medical Practitioner before they can return to play. While ideally this should be in writing, this may be conveyed verbally by the parent/guardian, but not by the child or adolescent. If done verbally, it is recommended that the school make a record of this. (This process is summarised in Diagram 3).

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

- a. Ensure that all symptoms have subsided before commencing GRTP
- b. Ensure that the GRTP protocol is followed
- c. Ensure that the advice of Medical Practitioners and other Healthcare Professionals is strictly adhered to.

After returning to play all involved with the player, especially coaches and parents must remain vigilant for the return of symptoms even if the GRTP has been successfully completed.

If symptoms reoccur the player must consult a Healthcare Practitioner as soon as possible as they may need referral to a specialist in concussion.
Diagram 3

Stage 2: Graduated Return to Play

For those where the GRTP protocol is not managed by a Medical Practitioner

GRTP monitored by a third party after 14 days of no playing of or training for sport

Does player have any symptoms remaining after 14 days of no playing of, or training for, sport?

- Symptom free
- Symptom(s) present

Symptom free

Player has no symptoms remaining after no activity - Level 1

Rest until symptom free

Symptom(s) present

No recurrence of symptoms within 24 hours

Light aerobic exercise - Level 2
Not before day 15

Recurrence of symptoms - 24 hours rest

No recurrence of symptoms within 24 hours

Rugby-specific exercise - no head contact (running drills) - Level 3
Not before day 16

Recurrence of symptoms - 24 hours rest

No recurrence of symptoms within 24 hours

Non-contact training skills (passing and resistance training) - Level 4
Not before day 17

Recurrence of symptoms - 24 hours rest

No recurrence of symptoms within 24 hours

Medical Practitioner and player agree that player may participate in full contact practice - Level 5
Not before day 20

Recurrence of symptoms - 24 hours rest

There can be a return to play - level 6
Not before day 21

(taken from IRB concussion guidelines irbplayerwelfare.com)
Educational Resources and Links

Schools and colleges may find the following educational resources useful in delivering any classes or sessions on concussion:

- “Think First” – Canadian Concussion Education  
  [www.thinkfirst.ca/programs/concussion.aspx](http://www.thinkfirst.ca/programs/concussion.aspx)

- US Centre for Disease Control and Prevention [www.cdc.gov/concussion/](http://www.cdc.gov/concussion/)

- Professor Paul McCrory provides a concise summary of concussion management:  
  [www.youtube.com/watch?v=UszWjRk3JV0](http://www.youtube.com/watch?v=UszWjRk3JV0)


RFU Resources

- Coaches Concussion Guide

- Return to Play Guide

- Pocket SCAT

These can all be downloaded from [rfu.com/concussion](http://rfu.com/concussion)
Summary of what can schools do to prevent and manage concussion correctly

To prevent concussions during rugby:

- Ensure the playing or training area is safe e.g. ground conditions, padding for posts etc.
- Ensure correct tackle technique is coached and performed consistently by all players.
- Explain the dangers of high, tip and spear tackles, and penalise them immediately if they occur. Similarly with tackling players in the air, jumping to catch the ball from kicks or lineouts.
- Encourage players to report concussions that occur during games and training sessions, and to report concussions that occur out of school. It is essential that school and club coaches communicate if a player is concussed.

There are some general principles that run through all the above and should be applied by all involved in rugby:

Concussion must be taken extremely seriously to safeguard the safety and long term health of players.

1. Know how to **RECOGNISE** concussion.
2. Players suspected of having concussion must be **REMOVE**d from play and must not resume play in the same match, and until cleared to do so (See note below).
3. All players suspected of having concussion must be assessed by a healthcare practitioner.
4. Players suspected of having concussion or diagnosed with concussion must **REST**
5. Players must go through a graduated **RETURN** to play protocol (GRTP) and receive medical clearance from a doctor before returning to play.

Remember the 4 R’s:

**RECOGNISE**       **REMOVE**       **RECOVER**       **RETURN**

These RFU Concussion resources have been developed based on the Zurich Guidelines published in the Consensus Statement on Concussion in Sport, and adapted for rugby by the International Rugby Board

The information contained in this resource is intended for educational purposes only and is not meant to be a substitute for appropriate medical advice or care. If you believe that you or someone under your care has sustained a concussion we strongly recommend that you contact a qualified health care professional for appropriate diagnosis and treatment. The authors have made responsible efforts to include accurate and timely information. However they make no representations or warranties regarding the accuracy of the information contained and specifically disclaim any liability in connection with the content on this site.