USA Rugby & IRB Concussion Update and Medical Review

Michael Keating
USA Rugby Director of Medical Services

USA RUGBY

USA Rugby Policy

- Developed by 10 members of USA Rugby representing multiple departments
- Reviewed and Endorsed by Medical Committee and Rugby Committee
- In accordance with IRB Regulation 10

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USA Rugby Policy

Know the 5 Rs

- USA Rugby's policy requires that ALL rugby players, staff, parents, referees, volunteers, and even fans follow these five basic steps when dealing with suspected concussions:
- **Recognize –** Learn the signs and symptoms of a concussion so you understand when an athlete might have a suspected concussion.
- **Remove –** If an athlete has a concussion or even a suspected concussion he or she must be removed from play immediately.
- **Refer –** Once removed from play, the player should be referred immediately to a qualified healthcare professional who is trained in evaluating and treating concussions.
- **Recover –** Full recovery from the concussion is required before return to play is authorized. This includes being *symptom-free*. Rest and some specific treatment options are critical for the health of the injured participant.
- **Return –** In order for safe return to play in rugby, the athlete must be symptom-free and cleared in writing by a qualified healthcare professional who is trained in evaluating and treating concussions. USA Rugby strongly recommends that the athlete complete the GRTP (Graduated Return to Play) protocol

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IRB Policy

6 Rs

1. **Recognise** – signs and symptoms
2. **Remove** – if any doubt, any symptoms
3. **Refer** – medical practitioner or approved healthcare professional
4. **Rest** – for the minimum period for the player's age
5. **Recover** – from all symptoms before starting exercise & RTP
6. **Return** – follow a GRTP

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DON'T 'TOUGH OUT' A CONCUSSION

KNOW THE 5 Rs

RECOGNIZE Learn the signs and symptoms of a concussion so you understand when an athlete might have a suspected concussion.

REMOVE If an athlete has a concussion or even a suspected concussion, he or she must be removed from play immediately.

REFER Once removed from play, the player should be referred immediately to a qualified healthcare professional who is trained in evaluating and treating concussions.

RECOVER Full recovery from the concussion is required before return to play is authorized. This includes being symptom-free. Rest and some specific treatment options are critical for the health of the injured participant.

RETURN In order for safe return to play in rugby, the athlete must be symptom-free and cleared in writing by a qualified healthcare professional who is trained in evaluating and treating concussions. USA Rugby strongly recommends that the athlete complete the GRTP (Graduated Return to Play) protocol.

MORE INFORMATION MORE RESOURCES : USARUGBY.ORG/CONCUSSIONS

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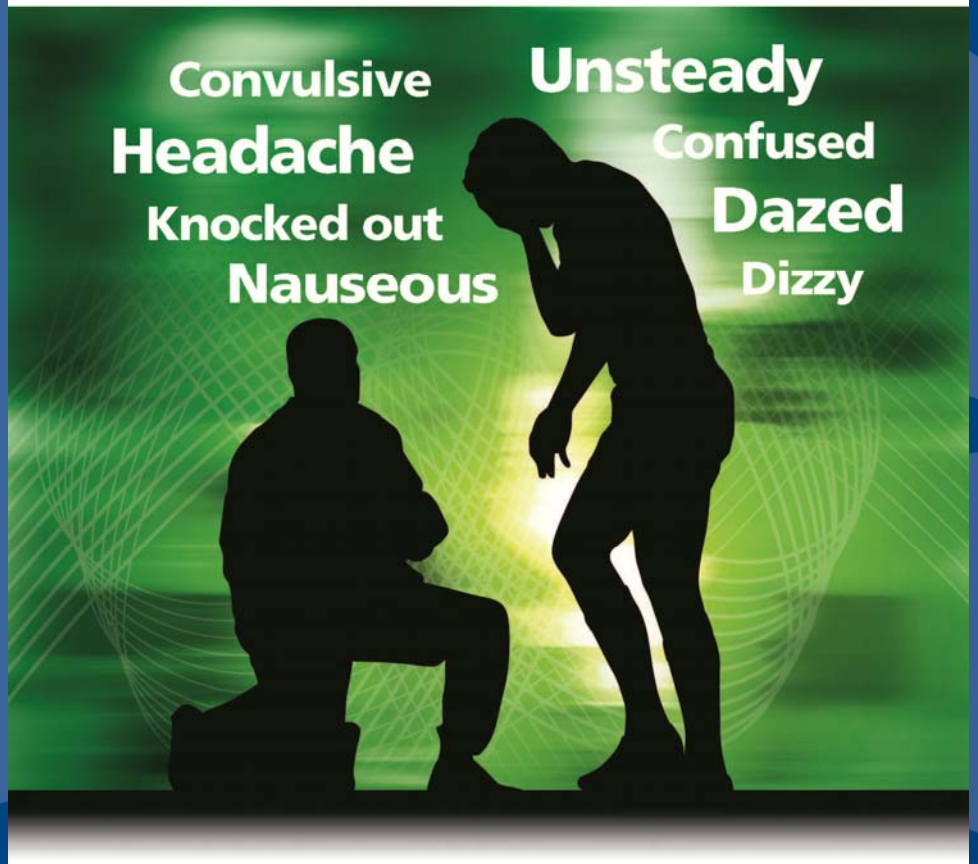
Concussion
Recognise & Remove



Any of these - get them off NOW

irbplayerwelfare.com/concussion

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IRB Regulation 10

- 10.1.2 All Players diagnosed with concussion during a Game or training must;

  (i) **be removed from the field of play and not return to play or train on the same day**; and

  (ii) **complete the graduated return to play protocol** described in the IRB Concussion Guidelines.

- 10.1.3 All Players who are **suspected** of having concussion during a Game or training at which there is no appropriately qualified person (as applicable in the relevant jurisdiction) present to diagnose concussion;

  (i) must be removed from the field of play and not return to play or train on the same day; and

  (ii) should be reviewed by an appropriately qualified person (as applicable in the relevant jurisdiction) and diagnosed as having concussion or not;

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PSCA

Pitch Side Concussion Assessment

- Triage screening tool
- Used at the elite level of Rugby to assist with the assessment of a player who has a head injury where the diagnosis is not immediately apparent.
- **Not used** on players who have an obvious concussion
- Subject to ongoing research

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PSCA Progress

Pre PSCA	Post PSCA
On the run and on the field assessment	5 minute off field assessment
Single mode assessment	Multimodal assessment
No pitch side concussion education	Compulsory on line medical education
No standardised follow up procedures	Standardised follow up procedures
No research into concussion	Entering second year of research
56% of confirmed concussions remaining on FOP following incident	**13%** of confirmed concussions remaining on FOP following incident

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What do you need to know as an administrator?

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What is a concussion?

- Concussion is a traumatic brain injury
- Results from either direct blow to head or blow to other parts of the body resulting in impulsive force to the brain (whiplash)
- Causes a disturbance of brain **function.** It does not cause damage to brain structures
- Standard neuro-imaging (CT and MRI) is typically normal.
- Loss of consciousness is a sign of concussion but is not an essential for diagnosing concussion - present in < 15% of concussive cases.

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Concussion – why is it important?

- Brain is a sensitive organ with poor recovery capacity
- One concussion increases risk of a second
- Concussion increases risk of other injuries
- Concussion linked with reduced performance
- Concussion can mimic an unidentified structural brain injury
- Concussion has been linked with a potential risk of long term neurological deterioration (dementia)

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What the experts say…

"Concussion is considered to be among the most complex injuries in sports medicine to diagnose, assess and manage"

"There is **no perfect diagnostic test** or marker that clinicians can rely on for an immediate diagnosis."

"Children with concussion should be managed conservatively"

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#1 Message

Recognize

&

Remove

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Concussion – what you should know

Head injury plus any of the following

↓

Permanent removal from field of play

- Convulsion (fit)
- Tonic posturing (rigid arms ±legs)
- Loss of consciousness
- Unsteady on feet
- Not orientated in time, place or person

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Common Symptoms

- Headaches
- Dizziness
- Mental clouding - confused or feeling slowed down
- Visual problems
- Fatigue
- Nausea

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Protect our Young Athletes

WHY??

- More susceptible to concussion
- Take longer to recover
- More significant mental processing problems.
- The group most susceptible to the rare but fatal, diffuse cerebral swelling - only in athletes under 18

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Protect our Young Athletes – How?

RECOGNIZE AND REMOVE

IF IN DOUBT SIT THEM OUT

DIFFERENT RETURN TO PLAY PROTOCOLS

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Protecting our Young Athletes

Age specific return to play protocols

Longer rest periods

Slower graduated return to play steps

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USA Rugby Policy

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What is Rest?

1. Rest from exercise (physical rest)

2. Rest from activities that require concentration (cognitive rest) – school, computer games, TV

Always see a doctor or an approved healthcare professional

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What is a GRTP?

GRTP – Graduated return to play

- The GRTP is a step by step program to move a player from rest to full activity – any symptoms → stop.
- Step 1 is rest and Step 6 is return to fully activity
- Steps 2 – 5 are training based progressive activity – jog, run, rugby drills and then full contact

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Return to Play

- Do NOT start GRTP if symptoms are present
- Do NOT progress if symptoms return
- Do NOT return to play if symptoms are present

Returning to play whilst symptomatic may result in re-injury, long term neurological injury and even death

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IRB RTP Guidelines

AGE GROUP	MINIMUM REST PERIOD POST CONCUSSION		GRTP		MINIMUM NUMBER OF MISSED WEEKENDS
U/6 - U/15 (Players 15 years and under)	2 weeks	Caution! Return to play protocol should be started only if the player is symptom free off medication that modifies symptoms of concussion	4 Stage GRTP with progression every 48 hours if asymptomatic Total GRTP days = 8 days.	Caution! Contact Sport should be authorized only if the player is symptom free off medication MEDICAL CLEARANCE RECOMMENDED	Earliest Return to play = 2 weeks rest post injury + 8 days GRTP (Play - Day 23 post injury) 3 Weekends missed
U/16 - U/19* (Players 16,17 and 18 years of age)	1 week		4 Stage GRTP with progression every 24 hours if asymptomatic Total GRTP days = 4 days.		Earliest Return to play = 7 days rest post injury + 4 day GRTP (Play - Day 12 post injury) 1 Weekend missed
Adults (Players 19 years and over)	24 hours		4 Stage GRTP with progression every 24 hours if asymptomatic Total GRTP days = 4 days.		Earliest Return to play = 24 hours rest post injury + 4 day GRTP (Play - Day 6 post injury)

Any player with a second concussion within 12 months, a history of multiple concussions, players with unusual presentations or prolonged recovery should be assessed and managed by health care providers (multidisciplinary) with experience in sports-related concussions. If this expertise is unavailable the player should be managed using the protocol from the lower age group.

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Tools

- Concussion Recognition Tool
- SCAT 3
- Child SCAT 3 (5-12)
- GRTP Protocols

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Pocket CONCUSSION RECOGNITION TOOL™

To help identify concussion in children, youth and adults

RECOGNIZE & REMOVE

Concussion should be suspected **if one or more** of the following visible clues, signs, symptoms or errors in memory questions are present.

1. Visible clues of suspected concussion

Any one or more of the following visual clues can indicate a possible concussion:

Loss of consciousness or responsiveness
Lying motionless on ground/Slow to get up
Unsteady on feet / Balance problems or falling over/Incoordination
Grabbing/Clutching of head
Dazed, blank or vacant look
Confused/Not aware of plays or events

2. Signs and symptoms of suspected concussion

Presence of any one or more of the following signs & symptoms may suggest a concussion:

- Loss of consciousness
- Seizure or convulsion
- Balance problems
- Nausea or vomiting
- Drowsiness
- More emotional
- Irritability
- Sadness
- Fatigue or low energy
- Nervous or anxious
- "Don't feel right"
- Difficulty remembering
- Headache
- Dizziness
- Confusion
- Feeling slowed down
- "Pressure in head"
- Blurred vision
- Sensitivity to light
- Amnesia
- Feeling like "in a fog"
- Neck Pain
- Sensitivity to noise
- Difficulty concentrating

3. Memory function

Failure to answer any of these questions correctly may suggest a concussion:

"What venue are we at today?"
"Which half is it now?"
"Who scored last in this game?"
"What team did you play last week/game?"
"Did your team win the last game?"

Any athlete with a suspected concussion should be IMMEDIATELY REMOVED FROM PLAY, and should not be returned to activity until they are assessed medically. Athletes with a suspected concussion should not be left alone and should not drive a motor vehicle.

It is recommended that, in all cases of suspected concussion, the player is referred to a medical professional for diagnosis and guidance as well as return to play decisions, even if the symptoms resolve.

RED FLAGS

If ANY of the following are reported then the player should be safely and immediately removed from the field. If no qualified medical professional is available, consider transporting by ambulance for urgent medical assessment:

- Athlete complains of neck pain
- Increasing confusion or irritability
- Repeated vomiting
- Seizure or convulsion
- Weakness or tingling/burning in arms or legs
- Deteriorating conscious state
- Severe or increasing headache
- Unusual behaviour change
- Double vision

Remember:

- In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Do not attempt to move the player (other than required for airway support) unless trained to so do
- Do not remove helmet (if present) unless trained to do so.

from McCrory et. al. Consensus Statement on Concussion in Sport. Br J Sports Med 47 (5), 2013

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SCAT3™

Sport Concussion Assessment Tool – 3rd Edition

For use by medical professionals only

Name | Date/Time of Injury / Date of Assessment | Examiner

What is the SCAT3?[1]

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively[2]. For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool[3]. Preseason baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the SCAT3 are provided on page 3. If you are not familiar with the SCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision or any reproduction in a digital form requires approval by the Concussion in Sport Group.

NOTE: The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The SCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgement. An athlete may have a concussion even if their SCAT3 is "normal".

What is a concussion?

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific signs and/or symptoms (some examples listed below) and most often does not involve loss of consciousness. Concussion should be suspected in the presence of **any one or more** of the following:

- Symptoms (e.g., headache), or
- Physical signs (e.g., unsteadiness), or
- Impaired brain function (e.g. confusion) or
- Abnormal behaviour (e.g., change in personality).

SIDELINE ASSESSMENT

Indications for Emergency Management

NOTE: A hit to the head can sometimes be associated with a more serious brain injury. Any of the following warrants consideration of activating emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs

Potential signs of concussion?

If any of the following signs are observed after a direct or indirect blow to the head, the athlete should stop participation, be evaluated by a medical professional and **should not be permitted to return to sport the same day** if a concussion is suspected.

Any loss of consciousness?	☐ Y ☐ N
"If so, how long?"	
Balance or motor incoordination (stumbles, slow/laboured movements, etc.)?	☐ Y ☐ N
Disorientation or confusion (inability to respond appropriately to questions)?	☐ Y ☐ N
Loss of memory:	☐ Y ☐ N
"If so, how long?"	
"Before or after the injury?"	
Blank or vacant look:	☐ Y ☐ N
Visible facial injury in combination with any of the above:	☐ Y ☐ N

1 Glasgow coma scale (GCS)

Best eye response (E)	
No eye opening	1
Eye opening in response to pain	2
Eye opening to speech	3
Eyes opening spontaneously	4
Best verbal response (V)	
No verbal response	1
Incomprehensible sounds	2
Inappropriate words	3
Confused	4
Oriented	5
Best motor response (M)	
No motor response	1
Extension to pain	2
Abnormal flexion to pain	3
Flexion/Withdrawal to pain	4
Localizes to pain	5
Obeys commands	6
Glasgow Coma score (E + V + M)	of 15

GCS should be recorded for all athletes in case of subsequent deterioration.

2 Maddocks Score[3]

"I am going to ask you a few questions, please listen carefully and give your best effort."

Modified Maddocks questions (1 point for each correct answer)

What venue are we at today?	0	1
Which half is it now?	0	1
Who scored last in this match?	0	1
What team did you play last week/game?	0	1
Did your team win the last game?	0	1
Maddocks score		of 5

Maddocks score is validated for sideline diagnosis of concussion only and is not used for serial testing.

Notes: Mechanism of injury ("tell me what happened"?):

Any athlete with a suspected concussion should be REMOVED FROM PLAY, medically assessed, monitored for deterioration (i.e., should not be left alone) and should not drive a motor vehicle until cleared to do so by a medical professional. No athlete diagnosed with concussion should be returned to sports participation on the day of injury.

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Child-SCAT3™

Sport Concussion Assessment Tool for children ages 5 to12 years

For use by medical professionals only

What is childSCAT3?[1]

The ChildSCAT3 is a standardized tool for evaluating injured children for concussion and can be used in children aged from 5 to 12 years. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively[1]. For older persons, ages 13 years and over, please use the SCAT3. The ChildSCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool[1]. Preseason baseline testing with the ChildSCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the ChildSCAT3 are provided on page 3. If you are not familiar with the ChildSCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision and any reproduction in a digital form require approval by the Concussion in Sport Group.

NOTE: The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The ChildSCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgment. An athlete may have a concussion even if their ChildSCAT3 is "normal".

What is a concussion?

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific signs and/or symptoms (like those listed below) and most often does not involve loss of consciousness. Concussion should be suspected in the presence of any one or more of the following:

-Symptoms (e.g., headache), or
-Physical signs (e.g., unsteadiness), or
-Impaired brain function (e.g. confusion) or
-Abnormal behaviour (e.g., change in personality).

SIDELINE ASSESSMENT

Indications for Emergency Management

NOTE: A hit to the head can sometimes be associated with a more severe brain injury. If the concussed child displays any of the following, then do not proceed with the ChildSCAT3, instead activate emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs
- Persistent vomiting
- Evidence of skull fracture
- Post traumatic seizures
- Coagulopathy
- History of Neurosurgery (eg Shunt)
- Multiple injuries

1 Glasgow coma scale (GCS)

Best eye response (E)	
No eye opening	1
Eye opening in response to pain	2
Eye opening to speech	3
Eyes opening spontaneously	4
Best verbal response (V)	
No verbal response	1
Incomprehensible sounds	2
Inappropriate words	3
Confused	4
Oriented	5
Best motor response (M)	
No motor response	1
Extension to pain	2
Abnormal flexion to pain	3
Flexion/Withdrawal to pain	4
Localizes to pain	5
Obeys commands	6
Glasgow Coma score (E + V + M)	of 15

GCS should be recorded for all athletes in case of subsequent deterioration.

Potential signs of concussion?

If any of the following signs are observed after a direct or indirect blow to the head, the child should stop participation, be evaluated by a medical professional and **should not be permitted to return to sport the same day** if a concussion is suspected.

Any loss of consciousness?	☐ Y ☐ N
"If so, how long?"	
Balance or motor incoordination (stumbles, slow/laboured movements, etc.)?	☐ Y ☐ N
Disorientation or confusion (inability to respond appropriately to questions)?	☐ Y ☐ N
Loss of memory:	☐ Y ☐ N
"If so, how long?"	
"Before or after the injury?"	
Blank or vacant look:	☐ Y ☐ N
Visible facial injury in combination with any of the above:	☐ Y ☐ N

2 Sideline Assessment – child-Maddocks Score[2]

"I am going to ask you a few questions, please listen carefully and give your best effort."

Modified Maddocks questions (1 point for each correct answer)

Where are we at now?	0	1
Is it before or after lunch?	0	1
What did you have last lesson/class?	0	1
What is your teacher's name?	0	1
child-Maddocks score		of 4

Child-Maddocks score is for sideline diagnosis of concussion only and is not used for serial testing.

Any child with a suspected concussion should be REMOVED FROM PLAY, medically assessed and monitored for deterioration (i.e., should not be left alone). No child diagnosed with concussion should be returned to sports participation on the day of injury.

BACKGROUND

Name: _____ Date/Time of injury: _____

Examiner: _____ Date of Assessment: _____

Sport/team/school: _____

Age: _____ Gender: ☐ M ☐ F

Current school year/grade: _____

Dominant hand: ☐ right ☐ left ☐ neither

Mechanism of Injury ("tell me what happened"): _____

_____

For Parent/carer to complete:

How many concussions has the child had in the past?	
When was the most recent concussion?	
How long was the recovery from the most recent concussion?	
Has the child ever been hospitalized or had medical imaging done (CT or MRI) for a head injury?	☐ Y ☐ N
Has the child ever been diagnosed with headaches or migraines?	☐ Y ☐ N
Does the child have a learning disability, dyslexia, ADD/ADHD, seizure disorder?	☐ Y ☐ N
Has the child ever been diagnosed with depression, anxiety or other psychiatric disorder?	☐ Y ☐ N
Has anyone in the family ever been diagnosed with any of these problems?	☐ Y ☐ N
Is the child on any medications? If yes, please list:	☐ Y ☐ N

_____

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Moving right along…

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First Aid in Rugby

- New IRB course delivered by IRB medical educators in the USA
- Online and Live/Practical Course
- Currently being rolled out in the USA

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Gender in Rugby

- 2 categories
  - –Mixed Gender participation
  - –Transgender Participation

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Mixed Gender

- **Best practise is for participation in mixed gender teams to be permitted only up until the end of the season (including the following off-season) in which the player turns 12 years of age.**

  In exceptional circumstances a player over 12 years of age may play on a mixed gender team where no other option in continuing to play Rugby other than this exists.
- **A player should not participate in Mixed Gender teams once they have reached the age of 15.**

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Transgender

- Based on the IOC Stockholm Declaration
- Several components must be met to be considered:
  - MD diagnosis, Psychiatrist sign off, surgical reassignment, legally changed, hormone therapy ongoing for at least 2 years

Then…. Review and Approval by Panel

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Is Rugby Safer than other Sports??

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Trend #1

YOUTH RUGBY IS GENERALLY

SAFER OR AS SAFE

AS OTHER YOUTH SPORTS

Rugby v. Other Sports

- Overall injury rate: 5.2
  - **5.2/1000 athlete exposures**
  - Boys statistically higher than girls (5.5 v 4.1)

Collins C, Mecheli L, Yard E, Comstock RD, Archives Ped Adolesc, Jan 2008

Rugby = FB, Wrestling

- **Statistically SIMILAR to HS football**
  - 4.4/1000 AEs (CDC MMWR, 2006)
  - 3.5/1000 Aes (Knowles et al, Epidemiology, 2009)
- **SIMILAR to wrestling**
  - Pasque et al, AJSM, 2000

Rugby > Basketball, Lacrosse

- **Basketball**
  - 1.94/1000AEs (Borowski et al, *RIO*, AJSM, 2008)
- **Lacrosse**
  - 2.9/1000AEs (Hinton et al, AJSM, 2005)

Rugby = Soccer?

- *In general, seems safer or as safe as soccer*
- **Yard et al, AJSM, 2008**
  - Soccer: 2.4/1000AEs
- Depends on study, definition of injury…

- **Junge et al, BJSM, 2004**
  - Rugby >> Soccer
    - Rugby 2.7x match injuries
    - 1.5x overuse injuries
    - 1.5x training injuries
  - Soccer more noncontact, rugby more contact
  - Soccer more LE (77%) than rugby (43%)

Concussion risk vs other sports

- Canada: Cusimano et al, PLOS ONE, March 2013
- Rugby = 5.6% of all brain injuries
  - Hockey 44.3%
  - Soccer 19%
  - Football 12.9%
  - Basketball 11.6%
  - Baseball 6.5%