Preparticipation Physical Evaluation
CLEARANCE FORM

This form is for summary use in lieu of the physical exam form and health history form and may be used when HIPAA concerns are present.

Name _____ Sex ☐ M ☐ F Age _____ Date of birth _____

☐ Cleared for all sports without restriction

☐ Cleared for all sports without restriction with recommendations for further evaluation or treatment for _____

_____

☐ Not cleared

- ☐ Pending further evaluation
- ☐ For any sports
- ☐ For certain sports _____

  Reason _____

Recommendations _____

I have examined the above-named student and completed the preparticipation physical evaluation. The athlete does not present apparent clinical contraindications to practice and participate in the sport(s) as outlined above. A copy of the physical exam is on record in my office and can be made available to the school at the request of the parents. If conditions arise after the athlete has been cleared for participation, the physician may rescind the clearance until the problem is resolved and the potential consequences are completely explained to the athlete (and parents/guardians).

Name of physician (print/type) _____ Date _____

Address _____ Phone _____

Signature of physician _____, MD or DO

EMERGENCY INFORMATION

Allergies _____

Other information _____

PREPARTICIPATION PHYSICAL EVALUATION
HISTORY FORM

(Note: This form is to be filled out by the patient and parent prior to seeing the physician. The physician should keep this form in the chart.)

Date of Exam _____

Name _____ Date of birth _____

Sex _____ Age _____ Grade _____ School _____ Sport(s) _____

Medicines and Allergies: Please list all of the prescription and over-the-counter medicines and supplements (herbal and nutritional) that you are currently taking

_____

_____

_____

Do you have any allergies? ☐ Yes ☐ No If yes, please identify specific allergy below.
☐ Medicines ☐ Pollens ☐ Food ☐ Stinging Insects

Explain "Yes" answers below. Circle questions you don't know the answers to.

GENERAL QUESTIONS	Yes	No
1. Has a doctor ever denied or restricted your participation in sports for any reason?		
2. Do you have any ongoing medical conditions? If so, please identify below: ☐ Asthma ☐ Anemia ☐ Diabetes ☐ Infections Other: _____		
3. Have you ever spent the night in the hospital?		
4. Have you ever had surgery?		
HEART HEALTH QUESTIONS ABOUT YOU	**Yes**	**No**
5. Have you ever passed out or nearly passed out DURING or AFTER exercise?		
6. Have you ever had discomfort, pain, tightness, or pressure in your chest during exercise?		
7. Does your heart ever race or skip beats (irregular beats) during exercise?		
8. Has a doctor ever told you that you have any heart problems? If so, check all that apply: ☐ High blood pressure ☐ A heart murmur ☐ High cholesterol ☐ A heart infection ☐ Kawasaki disease Other: _____		
9. Has a doctor ever ordered a test for your heart? (For example, ECG/EKG, echocardiogram)		
10. Do you get lightheaded or feel more short of breath than expected during exercise?		
11. Have you ever had an unexplained seizure?		
12. Do you get more tired or short of breath more quickly than your friends during exercise?		
HEART HEALTH QUESTIONS ABOUT YOUR FAMILY	**Yes**	**No**
13. Has any family member or relative died of heart problems or had an unexpected or unexplained sudden death before age 50 (including drowning, unexplained car accident, or sudden infant death syndrome)?		
14. Does anyone in your family have hypertrophic cardiomyopathy, Marfan syndrome, arrhythmogenic right ventricular cardiomyopathy, long QT syndrome, short QT syndrome, Brugada syndrome, or catecholaminergic polymorphic ventricular tachycardia?		
15. Does anyone in your family have a heart problem, pacemaker, or implanted defibrillator?		
16. Has anyone in your family had unexplained fainting, unexplained seizures, or near drowning?		
BONE AND JOINT QUESTIONS	**Yes**	**No**
17. Have you ever had an injury to a bone, muscle, ligament, or tendon that caused you to miss a practice or a game?		
18. Have you ever had any broken or fractured bones or dislocated joints?		
19. Have you ever had an injury that required x-rays, MRI, CT scan, injections, therapy, a brace, a cast, or crutches?		
20. Have you ever had a stress fracture?		
21. Have you ever been told that you have or have you had an x-ray for neck instability or atlantoaxial instability? (Down syndrome or dwarfism)		
22. Do you regularly use a brace, orthotics, or other assistive device?		
23. Do you have a bone, muscle, or joint injury that bothers you?		
24. Do any of your joints become painful, swollen, feel warm, or look red?		
25. Do you have any history of juvenile arthritis or connective tissue disease?		

MEDICAL QUESTIONS	Yes	No
26. Do you cough, wheeze, or have difficulty breathing during or after exercise?		
27. Have you ever used an inhaler or taken asthma medicine?		
28. Is there anyone in your family who has asthma?		
29. Were you born without or are you missing a kidney, an eye, a testicle (males), your spleen, or any other organ?		
30. Do you have groin pain or a painful bulge or hernia in the groin area?		
31. Have you had infectious mononucleosis (mono) within the last month?		
32. Do you have any rashes, pressure sores, or other skin problems?		
33. Have you had a herpes or MRSA skin infection?		
34. Have you ever had a head injury or concussion?		
35. Have you ever had a hit or blow to the head that caused confusion, prolonged headache, or memory problems?		
36. Do you have a history of seizure disorder?		
37. Do you have headaches with exercise?		
38. Have you ever had numbness, tingling, or weakness in your arms or legs after being hit or falling?		
39. Have you ever been unable to move your arms or legs after being hit or falling?		
40. Have you ever become ill while exercising in the heat?		
41. Do you get frequent muscle cramps when exercising?		
42. Do you or someone in your family have sickle cell trait or disease?		
43. Have you had any problems with your eyes or vision?		
44. Have you had any eye injuries?		
45. Do you wear glasses or contact lenses?		
46. Do you wear protective eyewear, such as goggles or a face shield?		
47. Do you worry about your weight?		
48. Are you trying to or has anyone recommended that you gain or lose weight?		
49. Are you on a special diet or do you avoid certain types of foods?		
50. Have you ever had an eating disorder?		
51. Do you have any concerns that you would like to discuss with a doctor?		
FEMALES ONLY		
52. Have you ever had a menstrual period?		
53. How old were you when you had your first menstrual period?		
54. How many periods have you had in the last 12 months?		

Explain "yes" answers here

_____

_____

_____

_____

_____

_____

_____

_____

I hereby state that, to the best of my knowledge, my answers to the above questions are complete and correct.

Signature of athlete _____ Signature of parent/guardian _____ Date _____

HE0503 9-2681/0410

Preparticipation Physical Evaluation

THE ATHLETE WITH SPECIAL NEEDS: SUPPLEMENTAL HISTORY FORM

This document is only necessary when the individual has a documented special need.

Date of Exam _____

Name _____ Date of birth _____

Sex _____ Age _____ Grade _____ School _____ Sport(s) _____

1. Type of disability		
2. Date of disability		
3. Classification (if available)		
4. Cause of disability (birth, disease, accident/trauma, other)		
5. List the sports you are interested in playing		
	Yes	**No**
6. Do you regularly use a brace, assistive device, or prosthetic?		
7. Do you use any special brace or assistive device for sports?		
8. Do you have any rashes, pressure sores, or any other skin problems?		
9. Do you have a hearing loss? Do you use a hearing aid?		
10. Do you have a visual impairment?		
11. Do you use any special devices for bowel or bladder function?		
12. Do you have burning or discomfort when urinating?		
13. Have you had autonomic dysreflexia?		
14. Have you ever been diagnosed with a heat-related (hyperthermia) or cold-related (hypothermia) illness?		
15. Do you have muscle spasticity?		
16. Do you have frequent seizures that cannot be controlled by medication?		

Explain "yes" answers here

Please indicate if you have ever had any of the following.

	Yes	**No**
Atlantoaxial instability		
X-ray evaluation for atlantoaxial instability		
Dislocated joints (more than one)		
Easy bleeding		
Enlarged spleen		
Hepatitis		
Osteopenia or osteoporosis		
Difficulty controlling bowel		
Difficulty controlling bladder		
Numbness or tingling in arms or hands		
Numbness or tingling in legs or feet		
Weakness in arms or hands		
Weakness in legs or feet		
Recent change in coordination		
Recent change in ability to walk		
Spina bifida		
Latex allergy		

Explain "yes" answers here

I hereby state that, to the best of my knowledge, my answers to the above questions are complete and correct.

Signature of athlete _____ Signature of parent/guardian _____ Date _____

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[1]. 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.

BACKGROUND

Name: _____ Date: _____

Examiner: _____

Sport/team/school: _____ Date/time of injury: _____

Age: _____ Gender: ☐ M ☐ F

Years of education completed: _____

Dominant hand: ☐ right ☐ left ☐ neither

How many concussions do you think you have had in the past? _____

When was the most recent concussion? _____

How long was your recovery from the most recent concussion? _____

Have you ever been hospitalized or had medical imaging done for a head injury? ☐ Y ☐ N

Have you ever been diagnosed with headaches or migraines? ☐ Y ☐ N

Do you have a learning disability, dyslexia, ADD/ADHD? ☐ Y ☐ N

Have you ever been diagnosed with depression, anxiety or other psychiatric disorder? ☐ Y ☐ N

Has anyone in your family ever been diagnosed with any of these problems? ☐ Y ☐ N

Are you on any medications? If yes, please list: ☐ Y ☐ N

_____

SCAT3 to be done in resting state. Best done 10 or more minutes post excercise.

SYMPTOM EVALUATION

3 How do you feel?

"You should score yourself on the following symptoms, based on how you feel now".

	none	mild		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
Nausea or vomiting	0	1	2	3	4	5	6
Dizziness	0	1	2	3	4	5	6
Blurred vision	0	1	2	3	4	5	6
Balance problems	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
Feeling slowed down	0	1	2	3	4	5	6
Feeling like "in a fog"	0	1	2	3	4	5	6
"Don't feel right"	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
Fatigue or low energy	0	1	2	3	4	5	6
Confusion	0	1	2	3	4	5	6
Drowsiness	0	1	2	3	4	5	6
Trouble falling asleep	0	1	2	3	4	5	6
More emotional	0	1	2	3	4	5	6
Irritability	0	1	2	3	4	5	6
Sadness	0	1	2	3	4	5	6
Nervous or Anxious	0	1	2	3	4	5	6

Total number of symptoms (Maximum possible 22) _____

Symptom severity score (Maximum possible 132) _____

Do the symptoms get worse with physical activity? ☐ Y ☐ N

Do the symptoms get worse with mental activity? ☐ Y ☐ N

☐ self rated ☐ self rated and clinician monitored

☐ clinician interview ☐ self rated with parent input

Overall rating: If you know the athlete well prior to the injury, how different is the athlete acting compared to his/her usual self?

Please circle one response:

no different	very different	unsure	N/A

Scoring on the SCAT3 should not be used as a stand-alone method to diagnose concussion, measure recovery or make decisions about an athlete's readiness to return to competition after concussion. Since signs and symptoms may evolve over time, it is important to consider repeat evaluation in the acute assessment of concussion.

COGNITIVE & PHYSICAL EVALUATION

4 Cognitive assessment

Standardized Assessment of Concussion (SAC)[4]

Orientation (1 point for each correct answer)

What month is it?	0	1
What is the date today?	0	1
What is the day of the week?	0	1
What year is it?	0	1
What time is it right now? (within 1 hour)	0	1
Orientation score		of 5

Immediate memory

List	Trial 1		Trial 2		Trial 3		Alternative word list		
elbow	0	1	0	1	0	1	candle	baby	finger
apple	0	1	0	1	0	1	paper	monkey	penny
carpet	0	1	0	1	0	1	sugar	perfume	blanket
saddle	0	1	0	1	0	1	sandwich	sunset	lemon
bubble	0	1	0	1	0	1	wagon	iron	insect
Total									

Immediate memory score total of 15

Concentration: Digits Backward

List	Trial 1		Alternative digit list		
4-9-3	0	1	6-2-9	5-2-6	4-1-5
3-8-1-4	0	1	3-2-7-9	1-7-9-5	4-9-6-8
6-2-9-7-1	0	1	1-5-2-8-6	3-8-5-2-7	6-1-8-4-3
7-1-8-4-6-2	0	1	5-3-9-1-4-8	8-3-1-9-6-4	7-2-4-8-5-6
Total of 4					

Concentration: Month in Reverse Order (1 pt. for entire sequence correct)

Dec-Nov-Oct-Sept-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan	0	1
Concentration score		of 5

5 Neck Examination:

Range of motion Tenderness Upper and lower limb sensation & strength

Findings: _____

6 Balance examination

Do one or both of the following tests.

Footwear (shoes, barefoot, braces, tape, etc.) _____

Modified Balance Error Scoring System (BESS) testing[5]

Which foot was tested (i.e. which is the **non-dominant** foot) ☐ Left ☐ Right

Testing surface (hard floor, field, etc.) _____

Condition

Double leg stance:	Errors
Single leg stance (non-dominant foot):	Errors
Tandem stance (non-dominant foot at back):	Errors

And / Or

Tandem gait[6,7]

Time (best of 4 trials): _____ seconds

7 Coordination examination

Upper limb coordination

Which arm was tested: ☐ Left ☐ Right

Coordination score of 1

8 SAC Delayed Recall[4]

Delayed recall score of 5

INSTRUCTIONS

Words in *Italics* throughout the SCAT3 are the instructions given to the athlete by the tester.

Symptom Scale

"You should score yourself on the following symptoms, based on how you feel now".

To be completed by the athlete. In situations where the symptom scale is being completed after exercise, it should still be done in a resting state, at least 10 minutes post exercise.

For total number of symptoms, maximum possible is 22.

For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132.

SAC[4]

Immediate Memory

"I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."

Trials 2 & 3:

"I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before."

Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. **Score 1 pt. for each correct response.** Total score equals sum across all 3 trials. Do not inform the athlete that delayed recall will be tested.

Concentration

Digits backward

"I am going to read you a string of numbers and when I am done, you repeat them back to me backwards, in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7."

If correct, go to next string length. If incorrect, read trial 2. **One point possible for each string length**. Stop after incorrect on both trials. The digits should be read at the rate of one per second.

Months in reverse order

"Now tell me the months of the year in reverse order. Start with the last month and go backward. So you'll say December, November … Go ahead"

1 pt. for entire sequence correct

Delayed Recall

The delayed recall should be performed after completion of the Balance and Coordination Examination.

"Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order."

Score 1 pt. for each correct response

Balance Examination

Modified Balance Error Scoring System (BESS) testing[5]

This balance testing is based on a modified version of the Balance Error Scoring System (BESS)[5]. A stopwatch or watch with a second hand is required for this testing.

"I am now going to test your balance. Please take your shoes off, roll up your pant legs above ankle (if applicable), and remove any ankle taping (if applicable). This test will consist of three twenty second tests with different stances."

(a) Double leg stance:

"The first stance is standing with your feet together with your hands on your hips and with your eyes closed. You should try to maintain stability in that position for 20 seconds. I will be counting the number of times you move out of this position. I will start timing when you are set and have closed your eyes."

(b) Single leg stance:

"If you were to kick a ball, which foot would you use? [This will be the dominant foot] Now stand on your non-dominant foot. The dominant leg should be held in approximately 30 degrees of hip flexion and 45 degrees of knee flexion. Again, you should try to maintain stability for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes."

(c) Tandem stance:

"Now stand heel-to-toe with your non-dominant foot in back. Your weight should be evenly distributed across both feet. Again, you should try to maintain stability for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes."

Balance testing – types of errors

1. Hands lifted off iliac crest
2. Opening eyes
3. Step, stumble, or fall
4. Moving hip into > 30 degrees abduction
5. Lifting forefoot or heel
6. Remaining out of test position > 5 sec

Each of the 20-second trials is scored by counting the errors, or deviations from the proper stance, accumulated by the athlete. The examiner will begin counting errors only after the individual has assumed the proper start position. **The modified BESS is calculated by adding one error point for each error during the three 20-second tests. The maximum total number of errors for any single condition is 10.** If a athlete commits multiple errors simultaneously, only one error is recorded but the athlete should quickly return to the testing position, and counting should resume once subject is set. Subjects that are unable to maintain the testing procedure for a minimum of **five seconds** at the start are assigned the highest possible score, ten, for that testing condition.

OPTION: For further assessment, the same 3 stances can be performed on a surface of medium density foam (e.g., approximately 50 cm x 40 cm x 6 cm).

Tandem Gait[6,7]

Participants are instructed to stand with their feet together behind a starting line (the test is best done with footwear removed). Then, they walk in a forward direction as quickly and as accurately as possible along a 38mm wide (sports tape), 3 meter line with an alternate foot heel-to-toe gait ensuring that they approximate their heel and toe on each step. Once they cross the end of the 3m line, they turn 180 degrees and return to the starting point using the same gait. A total of 4 trials are done and the best time is retained. Athletes should complete the test in 14 seconds. Athletes fail the test if they step off the line, have a separation between their heel and toe, or if they touch or grab the examiner or an object. In this case, the time is not recorded and the trial repeated, if appropriate.

Coordination Examination

Upper limb coordination

Finger-to-nose (FTN) task:

"I am going to test your coordination now. Please sit comfortably on the chair with your eyes open and your arm (either right or left) outstretched (shoulder flexed to 90 degrees and elbow and fingers extended), pointing in front of you. When I give a start signal, I would like you to perform five successive finger to nose repetitions using your index finger to touch the tip of the nose, and then return to the starting position, as quickly and as accurately as possible."

Scoring: 5 correct repetitions in < 4 seconds = 1

Note for testers: Athletes fail the test if they do not touch their nose, do not fully extend their elbow or do not perform five repetitions. **Failure should be scored as 0.**

References & Footnotes

1. This tool has been developed by a group of international experts at the 4th International Consensus meeting on Concussion in Sport held in Zurich, Switzerland in November 2012. The full details of the conference outcomes and the authors of the tool are published in The BJSM Injury Prevention and Health Protection, 2013, Volume 47, Issue 5. The outcome paper will also be simultaneously co-published in other leading biomedical journals with the copyright held by the Concussion in Sport Group, to allow unrestricted distribution, providing no alterations are made.

2. McCrory P et al., Consensus Statement on Concussion in Sport – the 3rd International Conference on Concussion in Sport held in Zurich, November 2008. British Journal of Sports Medicine 2009; 43: i76-89.

3. Maddocks, DL; Dicker, GD; Saling, MM. The assessment of orientation following concussion in athletes. Clinical Journal of Sport Medicine. 1995; 5(1): 32–3.

4. McCrea M. Standardized mental status testing of acute concussion. Clinical Journal of Sport Medicine. 2001; 11: 176–181.

5. Guskiewicz KM. Assessment of postural stability following sport-related concussion. Current Sports Medicine Reports. 2003; 2: 24–30.

6. Schneiders, A.G., Sullivan, S.J., Gray, A., Hammond-Tooke, G. & McCrory, P. Normative values for 16-37 year old subjects for three clinical measures of motor performance used in the assessment of sports concussions. Journal of Science and Medicine in Sport. 2010; 13(2): 196–201.

7. Schneiders, A.G., Sullivan, S.J., Kvarnstrom. J.K., Olsson, M., Yden. T. & Marshall, S.W. The effect of footwear and sports-surface on dynamic neurological screening in sport-related concussion. Journal of Science and Medicine in Sport. 2010; 13(4): 382–386

ATHLETE INFORMATION

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. The athlete should not be left alone and must go to a hospital at once if they:

- Have a headache that gets worse
- Are very drowsy or can't be awakened
- 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 their feet; have slurred speech

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

Return to play

Athletes should not be returned to play the same day of injury.
When returning athletes to play, they should be **medically cleared and then follow a stepwise supervised program,** with stages of progression.

For example:

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
No activity	Physical and cognitive rest	Recovery
Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity, 70 % maximum predicted heart rate. No resistance training	Increase heart rate
Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
Non-contact training drills	Progression to more complex training drills, eg passing drills in football and ice hockey. May start progressive resistance training	Exercise, coordination, and cognitive load
Full contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
Return to play	Normal game play	

There should be at least 24 hours (or longer) for each stage and if symptoms recur the athlete should rest until they resolve once again and then resume the program at the previous asymptomatic stage. Resistance training should only be added in the later stages.

If the athlete is symptomatic for more than 10 days, then consultation by a medical practitioner who is expert in the management of concussion, is recommended.

Medical clearance should be given before return to play.

Scoring Summary:

Test Domain	Score		
	Date:	Date:	Date:
Number of Symptoms of 22			
Symptom Severity Score of 132			
Orientation of 5			
Immediate Memory of 15			
Concentration of 5			
Delayed Recall of 5			
SAC Total			
BESS (total errors)			
Tandem Gait (seconds)			
Coordination of 1			

Notes:

CONCUSSION INJURY ADVICE

(To be given to the **person monitoring** the concussed athlete)

This patient has received an injury to the head. A careful medical examination has been carried out and no sign of any serious complications has been found. Recovery time is variable across individuals and the patient will need monitoring for a further period by a responsible adult. Your treating physician will provide guidance as to this timeframe.

If you notice any change in behaviour, vomiting, dizziness, worsening headache, double vision or excessive drowsiness, please contact your doctor or the nearest hospital emergency department immediately.

Other important points:

- Rest (physically and mentally), including training or playing sports until symptoms resolve and you are medically cleared
- No alcohol
- No prescription or non-prescription drugs without medical supervision. Specifically:
  - No sleeping tablets
  - Do not use aspirin, anti-inflammatory medication or sedating pain killers
- Do not drive until medically cleared
- Do not train or play sport until medically cleared

Clinic phone number

Patient's name

Date/time of injury

Date/time of medical review

Treating physician

Contact details or stamp

CONSENSUS STATEMENT: EXECUTIVE SUMMARY

Inter-Association Task Force Recommendations on Emergency Preparedness and Management of Sudden Cardiac Arrest in High School and College Athletic Programs

Co-Chairs: Ron Courson, ATC, PT, NREMT-I and Jonathan Drezner, MD

INTRODUCTION

Sudden cardiac arrest (SCA) is the leading cause of death in young athletes.[1, 2] Athletes are considered the healthiest members of our society, and their unexpected death during training or competition is a catastrophic event that stimulates debate regarding both preparticipation screening evaluations and appropriate emergency planning for athletic events. Despite preparticipation screening, healthy-appearing competitive athletes may harbor unsuspected cardiovascular disease with the potential to cause sudden death.[3] With the increasing availability of automated external defibrillators (AEDs) at athletic events, there is potential for effective secondary prevention of sudden cardiac death (SCD). The presence and timely access of AEDs at sporting venues provides a means of early defibrillation not only for athletes, but also for spectators, coaches, officials, event staff, and other attendees on campus in the case of an unexpected SCA.

Many health-related organizations have guidelines for managing SCA during athletic practices and competitions. However, these guidelines have not directly linked emergency planning and SCA management in athletics. The National Athletic Trainers' Association (NATA) convened an Inter-Association Task Force in Atlanta, Georgia on April 24, 2006, to develop consensus Recommendations on Emergency Preparedness and Management of SCA in High School and College Athletic Programs. The Task Force included representatives from 15 national organizations* with special interest in SCA in young athletes and a multidisciplinary group of health care professionals from athletic training, cardiology, electrophysiology, emergency medicine, emergency medical technicians, family medicine, orthopedics, paramedics, pediatrics, physical therapy, and sports medicine.

The goal of this statement is to assist high school and college athletic programs prepare for and respond to an unexpected SCA by summarizing essential elements of SCA in young athletes and outlining the necessary elements for emergency preparedness and standardized treatment protocols in the management of SCA. Management guidelines are focused on basic life support measures for SCA which can be provided by both bystanders and healthcare professionals before the arrival of emergency medical services (EMS) personnel. All recommendations in this statement are in agreement with the 2005 American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC),[4] the AHA Scientific Statement on Response to Cardiac Arrest and Selected Life-Threatening Medical Emergencies and the Medical Emergency Response Plan for Schools,[5] and the NATA Position Statement on Emergency Planning in Athletics.[6] Recommendations are directed towards the athletic health care team including athletic trainers, team physicians, coaches, school administrators, and other potential first responders. This statement is intended for high school and college athletic programs and institutions, although recommendations may be applicable in other settings.

Purpose of Consensus Statement

1) To summarize essential information regarding SCA in young athletes.
2) To define appropriate emergency preparedness for SCA at athletic venues.
3) To establish uniform recommendations for the management of SCA in athletes.

SUMMARY POINTS

Emergency Preparedness

- Every school or institution that sponsors athletic activities should have a written and structured emergency action plan (EAP).
- The EAP should be developed and coordinated in consultation with local EMS personnel, school public safety officials, on-site first responders, and school administrators.
- The EAP should be specific to each individual athletic venue and encompass emergency communication, personnel, equipment, and transportation to appropriate emergency facilities.
- The EAP should be reviewed and practiced at least annually with certified athletic trainers, team and attending physicians, athletic training students, school and institutional safety personnel, administrators, and coaches.[6]
- Targeted first responders should receive certified training in CPR and AED use.
- Access to early defibrillation is essential and a target goal of <3-5 minutes from the time of collapse to the first shock is strongly recommended.[5, 7]
- Review of equipment readiness and the EAP by on-site event personnel for each athletic event is desirable.

Management of Sudden Cardiac Arrest

- Management begins with appropriate emergency preparedness, CPR and AED training for all likely first responders, and access to early defibrillation.
- Essential components of SCA management include early activation of EMS, early CPR, early defibrillation, and rapid transition to advanced cardiac life support.
- High suspicion of SCA should be maintained for any collapsed and unresponsive athlete.
- SCA in athletes can be mistaken for other causes of collapse and rescuers should be trained to recognize SCA in athletes with special focus on potential barriers to recognizing SCA including inaccurate rescuer assessment of pulse or respirations, occasional or agonal gasping, and myoclonic or seizure-like activity.
- Young athletes who collapse shortly after being struck in the chest by a firm projectile or by contact with another player should be suspected of having SCA from commotio cordis.
- Any collapsed and unresponsive athlete should be managed as a SCA with application of an AED as soon as possible for rhythm analysis and defibrillation if indicated.
- CPR should be provided while waiting for an AED.
- Interruptions in chest compressions should be minimized and CPR stopped only for rhythm analysis and shock.
- CPR should be resumed immediately after the first shock, beginning with chest compressions, with repeat rhythm analysis following 2 minutes or five cycles of CPR, or until advanced life support providers take over or the victim starts to move.[7, 8]
- Rapid access to the SCA victim should be facilitated for EMS personnel.

**The following national organizations participated in the Task Force: American Academy of Emergency Medicine, American Academy of Pediatrics, American College of Emergency Physicians, American College of Sports Medicine, American Heart Association, American Medical Society for Sports Medicine, American Orthopaedic Society for Sports Medicine, American Osteopathic Academy for Sports Medicine, American Physical Therapy Association Sports Physical Therapy Section, National Association of Emergency Medical Service Physicians, National Association of Emergency Medical Technicians, National Athletic Trainers' Association, National Collegiate Athletic Association, National Federation of State High School Associations, and Sudden Cardiac Arrest Association.*

SUGGESTED GUIDELINES FOR MANAGEMENT OF HEAD TRAUMA - continued

The National Federation of State High School Associations recommends that State Associations distribute this information to the athletic directors in al their member schools so that persons making sideline decisions to allow an athlete to return to play can benefit from the latest knowledge on how to assess concussed athletes for warning signals that might suggest they not return to the game. In addition to the usual observations as to whether the athlete "seems OK", some assessment of orientation, memory and coordination at rest and after physical exertions is important to have a comprehensive knowledge of the athlete's mental status.

We have outlined some guidelines below that may be helpful in establishing a protocol at your institutions. Please bear in mind these are general guidelines and must not be used in place of the central role that physicians and certified athletic trainers must play in protecting the health and safety of student athletes.

A. POSSIBLE PROTOCOL FOR MANAGING CONCUSSION:

Grade 1 Concussion
(ding with no loss of consciousness
and "confusion" clears in 15 minutes)

First Concussion
"clears" in 15 min

OK return to game

First Concussion
doesn't clear in 15 min

Second Concussion
in same game of season

Doesn't return to game and must have medical clearance before further participation in practice and/or game whether the athlete seems clear or not.

B. SOME SIGNS OF CONFUSION / CONCUSSION

Confusion can be defined in many different ways and below are listed some of the signs and symptoms frequently associated with minor head trauma (a.k.a. "ding", "bell rung", dazed). Most categories of impairment appear to be deficits of attention, concentration, information processing speed, and memory. We have also suggested some of the means of assessing these signs and symptoms to decide the athlete is "clear" to return to action.

1. Cognitive deficits: Tests such as the Paced Auditory Serial Addition Task (PASAT), and Trails Making A & B Test have been shown to be helpful in identifying post-head trauma residual problems of cognition.

2. Lack of Sustained Attention: Difficulty sustaining adequate focus to complete a task or persevere with a coherent stream of thought can be a sign of poor attention. Repeating digits forward and backward, stating the months of the year in reverse order or counting backwards by a certain interval are ways of identifying this lack of concentration ability.

3. Confused mental status: Disorientation to time, date, place, address and phone number may be helpful; however, recent studies suggest that information relating to the game such as opponent, score, quarter, play was injured on and individual assignment on the play are more relevant to identifying deficits after minor head trauma

4. Amnesia: Retrograde amnesia usually represents a more serious deficit than post traumatic amnesia

B. SOME SIGNS OF CONFUSION / CONCUSSION - continued

5. "Dazed look or vacant stare"

6. Slurred or incoherent speech

7. Vomiting and/or nausea

8. Slow motor and verbal responses

9. Emotional liability: Reactions that seem out of proportion, and inappropriate, as well as, combative/aggressive behaviors can be seen for a period of time after a concussion.

10. Memory deficits (short-term and delayed memory): A common manifestation is the repeated asking of the same questions over and over again. Asking for details of the contest, names of teams in prior contests, remembering three words or objects at 0 and 5 minutes and asking about significant recent news events are ways of evaluating memory status.

11. Poor coordination: A recent study showed that an individual's balance was abnormal for three to five days after a concussion even without other residual signs and symptoms. Tests of strength, coordination and agility, such as finger-to-nose testing and tandem gait observations, can be helpful in analyzing the athlete's state of coordination.

12. Dizziness

13. Headaches: this is a very important symptom and has been one of the gold standards of clinical symptoms to help determine and return to play

14. Restlessness: Changing position frequently and having trouble resting or "finding a comfortable position" can be manifestations of post-head-trauma difficulties.

15. Neurasthenia (nervous weakness, exhaustion, and irritability) and Hyperesthesias (excessively sensitivity to various sensory stimuli such as touch, pain, light, sound, etc.

C. EXAMPLE OF A SPECIFIC INSTRUMENT THAT IS BEING USED TO DO SIDELINE ASSESSMENT OF ATHLETES WITH CONCUSSION:

The Sideline Assessment of Concussion (SAC) instrument developed by McCrae, Kelly, Bartolic et. Al, has been validated on hundreds of athletes. It incorporates those aspects of the evaluation that appear to be important. Their test has a reasonable user friendly system for grading concussions, utilizes some tests that can all be done on the sideline, includes a scoring system to serve as a guideline to help in decision making and suggests a course of action to follow on return to play. A palm card, as provided by the Brain Injury group and the Academy of Neurology, has summarized the experience and consensus of a number of researchers in this field. The palm card and a packet of test materials with information on scoring, etc. can be obtained from the Brain Injury Association at (202) 296-6443 or from the American Academy of neurology at (612) 623-8115.

The NFHS will continue to monitor developments in this research as investigators seek ways of making these instruments quicker and easier to use, hopefully without losing specificity and selectivity in results.

Home Instructions for Head Injuries

Dear Parent or Guardian:

Your child experienced a head injury during today's practice or game. Examples of common mild head injuries are "dings" or brief periods of being stunned, a concussion or brief period of being unconscious.

Although no evidence of any serious injury was found at this time, careful attention for the next 24-48 hours is advised since signs of head injury may appear later (sometimes even as long as several weeks after the injury).

It is not uncommon for individuals to experience headaches, mild visual disturbances, dizziness, unusual feeling, nausea and vomiting, drowsiness, or memory loss after a head injury.

A responsible adult should stay with the child for the first 24 hours. The child should be awakened every few hours during the night to be certain that he or she is able to communicate normally (know who he is, who you are, where he is and behave normally when awakened).

Call your doctor or bring your child to an emergency facility if the child cannot be aroused, does not respond normally, has a convulsion seizure, has persistent vomiting, or has a severe headache or neckache.

Print Name of Person Signature of Person Filing This Report Date This Report Filed

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Concussion: By the Numbers

- CDC estimates reveal that 1.6 million to 3.8 million concussions occur each year
- 5-10% of athletes will experience a concussion in any given sport season
- Fewer than 10% of sport related concussions involve a Loss of Consciousness (e.g., blacking out, seeing stars, etc.)
- Football is the most common sport with concussion risk for males (75% chance for concussion)
- Soccer is the most common sport with concussion risk for females (50% chance for concussion)
- 78% of concussions occur during games (as opposed to practices)
- Some studies suggest that females are twice as likely to sustain a concussion as males
- Headache (85%) and Dizziness (70-80%) are most commonly reported symptoms immediately following concussions for injured athletes
- Estimated 47% of athletes do not report feeling any symptoms after a concussive blow
- A professional football player will receive an estimated 900 to 1500 blows to the head during a season
- Impact speed of a professional boxers punch: 20mph
- Impact speed of a football player tackling a stationary player: 25mph
- Impact speed of a soccer ball being headed by a player: 70mph

ACBSP Position Statement on Concussion in Athletics

The management of concussion in athletics is an area of sports medicine that is clearly in continued evolution. Several methods of evaluating and assessing concussion that were once considered standards of care are now defunct. The importance of arriving at correct clinical decisions regarding the assessment, management and return to play criteria of individuals who have sustained concussion remains one of the greatest challenges to sports medicine providers.

Regarding the qualifications of Doctors of Chiropractic and their involvement in concussion management, it is the position of the ACBSP that:

1. Doctors of Chiropractic with current ACBSP post graduate certification(s) in sport (DACBSP and CCSP) are qualified to manage the concussed individual in any patient population.
2. Doctors of Chiropractic may evaluate, diagnosis and manage the concussed individual. The prerequisite management skills for a concussed athlete can be supported by additional education such as the ACBSP concussion registry.
3. All health care providers involved in the management of concussed individuals have an obligation to maintain current knowledge regarding best practices in concussion management. The ACBSP does not endorse any specific methodology of concussion management because the methods of assessment and management of concussion are in transition.

Regarding current best practices in concussion management it is the ACBSP position that:

1. Concussion may be caused by a direct blow to the head or elsewhere on the body.
2. Loss of consciousness is a key but NOT a required factor in the diagnosis of concussion. An individual may be concussed without a loss of consciousness.
3. Individuals with concussion may present with wide range of signs and symptoms such as physical signs of neurologic impairment, or/and symptoms of impaired brain function which may include abnormal behavior.
4. An athlete suspected of concussion must be removed from play and immediately assessed.
5. The concussed individual must not be allowed to return to play the same day they were concussed.
6. Any individual with signs or symptoms of concussion at rest or with exertion should not be allowed to participate in sport until the signs and symptoms have resolved.
7. Consultation with a qualified health care provider, including a DACBSP or CCSP, is essential after suspected concussion.

8. Individuals with concussion should be directly observed, receive serial examinations and not be left alone after the injury until their constellation of symptoms are static.
9. Any increase of symptoms (especially increasing headache, decreasing neurologic function, presence of any focal neurologic deficit, altered vital signs, or repeated vomiting) in a concussed individual requires urgent evaluation of the individual in a hospital setting.
10. A graded return-to-play protocol must be followed prior to resumption of full sporting activity.
11. Clearance by a qualified healthcare provider must be sought prior to the athlete returning-to-play.
12. An athlete must be symptom-free at rest and with exercise prior to return-to-play.

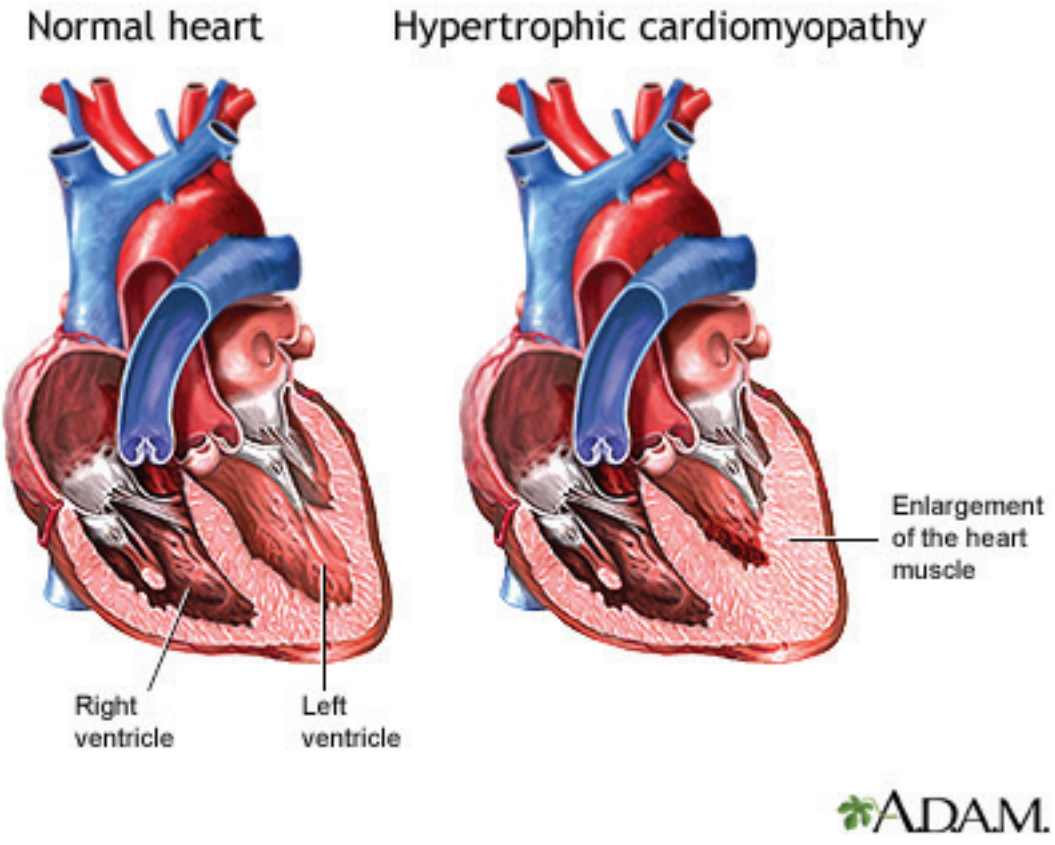
A recommended current reference for consensus based approach to concussion management is the *Consensus Statement on Concussion in Sport: The 3rd International Conference on Concussion in Sport Held in Zurich, November 2008.* Agreement exists pertaining to principal messages conveyed within this document, the authors acknowledge that the science of concussion is evolving and, therefore, management and return-to-play (RTP) decisions remain in the realm of clinical judgment on an individualized basis.

Sports Medicine providers are encouraged to copy and distribute freely the following resources:

Zurich Consensus document - includes the Sports Concussion Assessment Tool (SCAT2)

NEW INFORMATION IN UNDERSTANDING HYPERTROPHIC CARDIOMYOPATHY

Hypertrophic cardiomyopathy (HCM) is a thickening of the heart wall (typically the left ventricle). The cause of HCM is a genetic mutation of the cardiac sarcomere (cardiac muscle cell). The condition is described as obstructive (70% of cases) and nonobstructive in nature. The prevalence is 1 case in 500 - 1000 population and is the most common genetic disorder of the heart. HCM is one of the many (and the most common) cardiac conditions that can lead to sudden cardiac arrest (SCA) in athletes. Diagnosis of HCM in athletes is particularly challenging because athletes tend to have larger hearts and ultimately a thicker left ventricle wall because of their intense training and conditioning.



SIGNS AND SYMPTOMS

The most common signs and symptoms for HCM include dysnea (difficulty breathing), angina, dizziness, palpitations, and syncope (fainting). Unfortunately, many times the conditions is asymptomatic and sudden cardiac death could be the most dramatic and only symptom of HCM. Sudden death from HCM typically occurs during or following strenuous exercise.

RISK FACTORS

First degree risk factors:

- Family history of sudden cardiac death (<45 years old)
- Recurrent syncope (fainting)
- Left ventricle hypertrophy (L VH)
- Abnormal blood pressure response during exercise

DIAGNOSIS AND TREATMENT

If you would like more specific information on the diagnosis and treatment guidelines for HCM, click HERE for the standards published in November 2011 by the American Heart Association (AHA) and the American College of Cardiology Foundation (ACCF).

CURRENT RESEARCH

The most recent information available on the topic of HCM has been provided by researchers at Stanford University. Researchers are investigating the underlying causes of the genetic mutation of the cardiac sarcomere. Results of this study showed that calcium dysregulation (calcium elevation) was likely to lead to HCM. Restoration of calcium homeostasis (balance) prevented hypertrophy (enlargement of heart) and other physiological irregularities. The authors are hopeful that these finding can lead to improved and novel treatments for the condition. Current treatment includes adapting physical activities and in severe cases implantation of a pacemaker. To read the press regarding the study's publication and its potential implications, click HERE.