STANDARD

ASSESSMENT OF

CONCUSSION

SAC.

WHEN CAN I GO BACK IN COACH?

FLAG, TACKLE AND CHEER

ALL INSTRUCTIONS WERE GATHERED FROM THE STANDARDIZED ASSESSMENT OF CONCUSSION.

Rationale and significance of the SAC.

- Need for better methods for identifying head concussion.
- Why not formal neuropsychological testing?
  Cannot be administered on the sidelines by coaches or athletic trainers.
- Designed to measure immediate neurocognitive effects of concussion.
- Quick and easy to administer

Guidelines for interpretation, SAC.

- THE SAC. SHOULD NOT BE USED AS A SUBSTITUTE FOR ROUTINE MEDICAL DECISION MAKING.
- Approach to using the SAC.:
  Test – re-test method for each individual.
- Give all players/cheerleaders pre-season SAC.

- If a player/cheerleader sustains a concussion, the SAC. should be administered by the Coach or Athletic Trainer immediately!!!!!

- The post-injury SAC. score is compared to the individual's pre-season S.A.C. score.

- Players/cheerleader who shows a 3-point drop or more should be considered reflecting possible neurocognitive impairment.

Listed below are the general areas of functioning assessed in the order prescribed by the SAC. A brief introductory statement should be made to inform the subject about what will follow.

INTRODUCTION:

I am going to ask you some questions. Please listen carefully and give me your best effort.

ORIENTATION:

This segment is intended to assess the player/cheerleaders awareness of accurate time, place and circumstance. It is necessary to give the player/cheerleader specific instructions.

I am going to ask you some questions about where we are, are You ready?

What month is this?
What is the date or day of the month?
What day of the week is it?
What year is it?
What time do you think it is?

The player/cheerleader is granted one point for each correct response. For questions regarding the time of day, one point is granted for a response within one hour of the actual time. All other answers must be precise to earn one point. The total score for the orientation section of the SAC. is 5 points.

IMMEDIATE MEMORY:

Immediate memory is assessed using a brief repeated list-learning test. The subject should be read the list of five words once and asked to repeat back to the examiner as many words as he/she is able to recall. This procedure is then repeated two more times for a total of 3 trials. The subjects total score equals the total number of words correctly recalled during all three trials.

The specific instructions for the Immediate Memory portion of the SAC. are as follows:

> (Trial one) **I am going to test your memory. I will read you a list of words. When I am done, repeat back as many words as you can remember, in any order.**
>
> (Trial two & three) **I am going to repeat that list again. In any order, repeat back as many words as you can remember, even if you said them before.**

Two important points should be noted. First, ensure that the subject understands that on Trial two and three he/she should repeat even those words recalled during the previous trials. Secondly, after Trial three, the player is not given any cue regarding the delayed recall segment, which will follow a few minutes later. Notice that separate lists have been included for Forms A, B and C, respectively, in order to avoid practice effects.

NEUROLOGICAL TESTS:

The brief neurological screening included in the SAC is **not** a scored entity and does not contribute to the computed SAC total score. Nonetheless, the following neurological screening methods are incorporated as a supplement to the scored mental status test because of the importance of assessing for neurological change, which can be indicative of concussion.

Recollection of the injury: The subject should be questioned regarding recall of the circumstances surrounding the incident that resulted in the suspected concussion. This exercise is necessary to assess for the presence of any degrees of post-traumatic amnesia. The existence and length of any gap in recall should be recorded.

Strength: Examine the subject's grip strength in each hand by asking him/her to squeeze the examiner's hand as firmly as possible. Bicep flexion for each arm should also be assessed. Weakness in any form is abnormal.

Sensation: The finger –to-nose test involves asking the subject to touch his/her nose with the index finger of each hand. This test involves starting with the arm in the extended position and repeating the exercise initially with the eyes closed and then with eyes open. Note whether there is an improvement in performance when the eyes are open. In the Romberg examination, the subject is asked to stand with feet together and eyes closed and must be able to stand steadily with eyes open before a comparison can be made when the subjects' eyes are closed. The test is positive if the subject sways markedly, is forced to broaden his/her stance in order to maintain his/her balance or cannot stand with eyes closed.

Coordination: Tandem walking involves having the player/cheerleader walk with the heel placed directly against the front of the toe with each step taken, as it measuring distance by footsteps. Do not rush the player/cheerleader and be prepared to provide assistance if the player/cheerleader falters. Ask the player/cheerleader to: **Walk heel against toe, as if you were measuring a distance with your feet.** Failure involves an inability to maintain the balance necessary to walk five steps total in the heel-to-toe method.

Coordination (cont.)

The finger-nose-finger test involves asking the player/cheerleader, with eyes open; to alternately touch the trainer's finger held at approximately arms length from the player/cheerleader and then touch his own nose. As this is repeated, the trainer moves his finger into many different positions. Specifically, instruct the player/cheerleader to: **With your eyes open, touch my finger and then your nose with your index finger.** The test is failed if the player/cheerleader cannot smoothly and precisely complete both movements.

In genera, during testing of neurological functions, any appearance of associated symptoms such as: dizziness, nausea, unsteadiness, photophobia, blurred or double vision, emotional liability or mental status changes is abnormal.

CONCENTRATION:

Attention and concentration will be measured by the subjects' ability to repeat numerical digits and recite the months of the year in reverse order. As in the case of the word list used to asses memory, different digits have been used on Forms A, B and C. An example of each test is provided during the instructions in order to ensure that the player comprehends the task. First inform the player/cheerleader that:

> **I am going to read you a string of numbers. When I am finished, repeat them back to me backwards, that means 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 a player/cheerleader is correct on the first trial of string length, proceed to the next string length. If incorrect on the first trial, administer the second trial of the same string length. i.e.: 6-5-4 (3 numbers) 4-5-6. Proceed to the next string length if the player/cheerleader is correct on the second trial. Discontinue this exercise after the subject fails both trials of the same string length and proceed to the months in reverse order.

Concentration (cont.)

Following the reverse digits span test, instruct the player to:

> **Now, tell me the months of the year in reverse order. That is, start with the last month and go to the first month. So, you'll say December, November….. Go ahead.**

One point is awarded for each correct string length on the reverse digit span test and one point for the months of the year in correct reverse order, for a possible total score of 5 on the concentration section of the exam.

EXERTIONAL MANEUVERS:

This segment of the exam is **not** scored. Nonetheless, in order to appropriately test for cognitive and neurological effects, subjects should be tested under exertion when given the appropriate setting and context. Provocative exertional maneuvers are theoretically incorporated to create conditions of increased intracranial pressure under which cognitive and neurological signs of concussion are best elicited. These maneuvers should be completed immediately following completion of the Concentration section of the SAC. This procedure should be conducted in the following manner and sequence.

1. Instruct the subject to complete **10 jumping jacks** on the sideline.

2. Instruct the subject to complete **5 full push-ups**.

3. Instruct the subject to complete **5 full sit-ups**.

4. Instruct the subject to complete **5 full knee-bends**

DELAYED RECALL MEMORY:

In this exercise, the player/cheerleader's ability to retain previously learned information is assessed by asking him/her to recall as many words as possible from the initial list learning task which was used to assess immediate memory. This delayed recall task should be administered immediately following the neurological tests. Specifically ask the player/cheerleader:

> **Do you remember that list of words I read a few times earlier? I want you to tell me as many words from the list as you can remember in any order.**

Maximum score on the memory recall is 5 points.

COMPUTING TOTAL SCORE:

The total possible score of the sideline examination is 30 points. This score reflects the sum of the total possible scores for each of the following domains of function:

Orientation	**5**
Immediate Memory	**15**
Concentration	**5**
Memory Recall	**5**
Total	**30**

Enter the player/cheerleaders total correct for each section and total exam score in the appropriate space provided on the score sheet.
(Again, this tool is simply intended as an additional source of information for Athletic Trainers, Coaches and Medical Personnel in the course of their normal clinical decision-making. The decision-making should also take into account other possible indicators of concussion).

GRADES OF CONCUSSION

Grade 1

1. Transient confusion (inattention, liability to maintain a coherent stream of thought and carry out goal-directed movements)
2. No loss of consciousness
3. Concussion symptoms or mental status abnormalities on examination resolve in less than 15 minutes.

Grade 2

1. Transient confusion
2. No loss of consciousness
3. Concussion symptoms or mental status abnormalities (including amnesia) on examination last more than 15 minutes.

Grade 3

1. Any loss of consciousness
    a. brief (seconds)
    b. prolonged (minutes)

Features of Concussion Frequently Observed

- Vacant stare (befuddled facial expression)
- Delayed verbal and motor responses (slow to answer questions or follow instructions)
- Confusion and inability to focus attention (easily distracted and unable to follow through normal activities)
- Disorientation (walking in the wrong direction; unaware of time, date and place)
- Slurred or incoherent speech (making disjointed or incomprehensible statements)
- Gross observable lack of coordination (stumbling, inability to walk tandem/straight line)
- Emotions out of proportion to circumstances (distraught, crying for no apparent reason)
- Memory deficits (exhibited by the athlete repeatedly asking the same question that has already been answered, or inability to memorize 3 out of 3 words or 3 out of 3 objects in 5 minutes)
- Any period of loss of consciousness (paralytic coma, unresponsiveness to arousal)

RECOMMENDATIONS FOR MANAGEMENT OF CONCUSSION IN ATHLETES

Grade 1

- Remove from contest
- Examine immediately and at 5-minute intervals, both at rest and during exertion, for the development of mental status changes or post-concussive symptoms
- May return to contest if mental status abnormalities or post-concussive symptoms clear within 15 minutes.

Grade 2

- Remove from contest and disallow return that day
- Examine on-site frequently for signs of evolving intracranial pathology
- A trained person should re-examine the athlete the next day
- A Physician should perform a neurological examination to clear the athlete for return to play/cheer after one full week without symptoms, both at rest and during exertion.
- A written medical release from the attending physician must be received before any Youth Football or Cheerleader is allowed back to practice or games.

Grade 3

- Call 911 (Do not EVER remove a child from the field/stadium if they are unconscious. The player/cheerleader needs to be transported by ambulance to the nearest hospital and if needed with cervical spine immobilization applied by the EMT that responds to the call)
- A thorough neurological evaluation should be performed, including appropriate neuroimaging procedures when indicated.
- Hospital admission is indicated if any signs of pathology are detected or if mental status of the athlete remains abnormal.
- A written medical release by the attending physician must be received before any Youth Football or Cheerleader is allowed back to practice or the games.

GUIDELINES FOR INTERPRETATION, SAC

****The SAC should not be used as a SUBSTITUTE for routine decision making.

****Approach to using the SAC:
Test – Retest method for each player/cheerleader.

****Any score **below** 25 should be considered reflecting possible neurocognitive impairments.

****Give all players/cheerleaders a preseason SAC

****If a player sustains a concussion, the coach or assistant coach should administer the SAC immediately!!!!!

****The post-injury SAC score is compared to the individual's pre-season SAC score.

****Players/cheerleaders who show a 3 point drop or more should be considered reflecting possible neurocognitive impairment, and parent should be advised to seek medical treatment.