Concussion Vital Signs Report Guide

Concussion Vital Signs®

Neurocognitive Report Evaluation Backgrounder

There are two types of Concussion Vital Signs neurocognitive testing reports depending on the test administered. One of course, is the Baseline report. The second is the Post Injury report. Concussion Vital Signs reports are scored from seven venerable computerized neuropsychological tests measuring the speed and accuracy of an athlete's neurocognitive performance.

Each neurocognitive testing report, both Baseline and Post Injury, presents the testing results as:

'Subject Scores' *or raw scores computed from raw score calculations using the data values of individual subtests and are simply the number of correct responses, incorrect responses, and reaction times.*

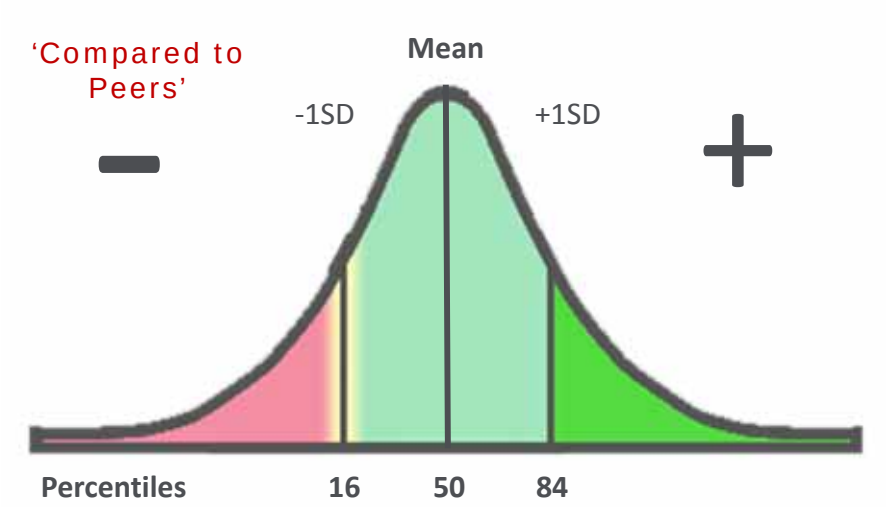
'Compared to Peers' or *an index of how the athlete scored compared to other subjects (NORMATIVE) of the same age.* The 'Compared to Peers' is based on percentiles rank and should be interpreted in conjunction with Subject Scores. Percentiles Scores may help by suggesting an improvement or decline from baseline to post-injury, but, this can only be confirmed by comparing the Subject Scores.

'Valid Score' *is a computed measure of an athletes likely testing effort.* Testing results on all neuropsychological tests (computerized and paper & pencil) like Concussion Vital Signs can be considered invalid if the testing subject does not put forth good effort during the testing process. Testing subjects may also misunderstand or not read the instructions and score abnormally low on a particular test. If a testing subject tests abnormally low (NO on the Valid Score) then that would be a reason for retesting the individual. If they again score low (NO on the Valid Score) with what you perceive as the subject putting forth a good effort then you should refer the subject for further clinical evaluation (this is rare). The test proctor should reinforce the need for the athlete to give a good testing effort and use the VALID SCORE (embedded indicators of effort) as a tool to help with the reinforcement. *NOTE: To learn more about the Valid Score calculations go to page 4.*

The Post-Injury report first page will display the Baseline scores along with current Post-Injury scores as well as whether or not current Post-Injury scores for the athlete returned to baseline, or within 5% of baseline.

The second page of the Post Injury report will produce graphs of all scores to date such that you have a longitudinal view of the testing performance, for all testing to date. For clinician, the report can be printed if needed as part of a patient chart and the PDF format typically can be uploaded to EMRs.

In addition, a Concussion Symptom Severity Scale and a Concussion History are reported when completed as part of the testing protocol.



Neurocognitive – Neuropsychological Resources

Above Average:	**> 84**	**High Function and High Capacity**
Average:	**16 - 84**	**Low Average to Normal Function**
Below Average:	**< 16**	**Slight Deficit to Impairment Likely**

Neurocognitive Report Evaluation Backgrounder

Evaluating the Baseline Report

Check that all test domains are valid. Test validity can be found in the column labeled 'Validity Score'. If there is a "NO" listed for any of the domains, it is suggested the test be re-administered until the athlete scores valid scores on all domains.

Note that Concussion Vital Signs is a subset of the clinical battery CNS Vital Signs and as such may identify athletes with a cognitive deficit. Athletes with extremely low scores that cannot improve upon retest may need to see a qualified healthcare provider for a more comprehensive workup. Low scores will be described in the "Compared to Peers" column on the report.

There are three possible groups in the Compared to Peers column, Below Average, Average and Above Average. Athletes scoring Above Average are scoring greater than one standard deviation higher than their student peers. Athletes scoring Below Average are score less than one standard deviation than their student peers. Average score fall between Above Average and Below Average. About 2/3 of students peers will score Average.

Repeat baseline testing is encouraged if it is felt the athlete did not do their best or if the scores seem much lower than expected.

Evaluating the Post-Injury Report.

The athlete might be experiencing a deficit such that they are unable to register a valid score. This may be of clinical significance and if the athlete cannot score valid tests a referral to a qualified healthcare provider for a more comprehensive workup should be considered.

Check that the athlete has returned to "At Baseline or Better" and act accordingly per your concussion monitoring protocol. If an athlete is unable to return to baseline a referral to a qualified healthcare provider for a more comprehensive workup should be considered.

Concussion Vital Signs is not a substitute for a neurological workup or comprehensive neurocognitive testing. Similarly, the Concussion Vital Signs testing is not exhaustive and performance within normal limits should not be taken as lack of evidence for cognitive disorders.

Clinician Portal: Enabling Coordinated Care with Qualified Health Professionals

It is important to understand that the report displays a **'Concussion Reference Code'** allowing clinicians assisting post-injury evaluation decisions to better access an athletes test reports and administer an in-office post-injury test at no cost.

To access just CLICK the Clinical Portal button on the right-handed side of the Concussion Vital Signs homepage. In those cases where testing is administered in clinician offices the report will be available for printing at the office as well as being archived in the school Concussion Vital Signs account.

About Valid Score: Evaluate Effort

WHY? When analyzing test data, either in research, or in clinical practice, it is important to know whether a test result is valid or not. Clinicians need to know if testing subjects are generating "dubious results" or a "non-credible response pattern." Concussion Vital Signs has developed "validity indicators" for its tests and domains that indicate whether the patient gave poor effort or generated invalid results (feigning, etc.) It is important to have "valid" tests to get a true evaluation of a patient.

Domain Scores	Baseline		
	Subject Score	Compared to Peers	Valid Score
Neurocognitive Index (NCI)		Average	Yes
Verbal Memory	51	Average	Yes
Visual Memory	52	Average	Yes
Psychomotor Speed	190	Average	Yes
Executive Function	43	Average	Yes
Cognitive Flexibility	40	Average	Yes
CPT Correct Responses	40	Average	Yes
Reaction Time*	538*	Above	Yes
Reaction Time Detail			
Simple Reaction Time*	284*	Average	Yes
Choice Reaction Time Correct*	432*	Average	Yes
Shifting Attention Correct RT*	856*	Average	Yes

WHAT? The Concussion Vital Signs **'Valid Score'** is a guideline identifying the possibility of an invalid test or domain score. When reviewing a report, a "No" in the Valid Score column suggests the clinician should evaluate whether or not the test subject understood the test, put forth their best effort, or has a clinical condition requiring further evaluation. The CLINICAL DOMAIN validity indicators are based on summary data from single and multiple tests. Keep in mind, it is not uncommon for patients to generate an invalid result on one test in the battery due to misreading the instructions or giving-up on the test. ***Proper pretest instruction leads to a better testing experience.***

HOW? The Validity Indicator alerts the clinician to the possibility of an invalid test allowing the clinician to question the testing subject: Do the testing results reflect an understanding of the test and the instructions? Did the testing subject put forth their best effort? Did they get a good night's sleep? Does the subject have poor vision and need their glasses? Do the results suggest willful exaggeration or the lack of ability to read the instructions? Should a subject test abnormally low triggering an "invalid" test (NO will be displayed in the Valid Score section of the report) then that would be a reason for retesting the individual, unless your clinical judgment makes you believe that is the best score the patient can achieve. Like any suspicious lab, the test should be re-administered.

Concussion Vital Signs Embedded Indicators of Valid Effort

Clinical Domains	Test Validity Indicators	Validity Criteria
Verbal Memory	Verbal Memory raw score > 30.	Verbal Memory Test is valid
Visual Memory	Visual Memory raw score > 30.	Visual Memory Test is valid
Psychomotor Speed	Both FTT and SDC are Valid	Finger Tapping Test and Symbol Digit Coding Test are valid
Executive Function	SAT: errors < correct responses.	Perception of Emotions Test is valid
Cognitive Flexibility	Valid Stroop and SAT. Correct > incorrect responses in all tests.	Shifting Attention Test and Stroop Test are valid
CPT Correct Responses	CPT - Correct > incorrect response in all tests.	Continuous Performance Test are valid
Reaction Time	Stroop: Simple RT < Complex RT < Stroop RT	Stroop Test is valid

FTT - Finger Tapping Test; SAT – Shifting Attention Test; SDC – Symbol Digit Coding Test; RT – Reaction Time; CPT – Continuous Performance Test

Neurocognitive Report Evaluation Backgrounder

Concussion Vital Signs Neurocognitive Domain Dashboard BASELINE Example:

Concussion Vital Signs Baseline Report	
Athlete Reference/ID: athletetest	Test Date Local: September 17, 2014 15:39:55
Full Name: John Doe	Age: 18
Administrator: Athlete Assessment	Language: English (United States)
Total Test Time: 31:12 (min:secs) for all tests in this report	Test Date GMT: September 17, 2014 22:39:55
Testing Supervision: Supervised by athletic trainer or school personnel	Testing Environment: Group 16 or More
Concussion Reference Code: 2T47GERB Used to view the most recent report or administer post-injury assessment at www.concussionvitalsigns.com	

Domain Scores	1 Subject Score	2 Baseline Compared to Peers	3 Valid Score
Neurocognitive Index (NCI)		Average	Yes
Verbal Memory	51	Average	Yes
Visual Memory	52	Average	Yes
Psychomotor Speed	190	Average	Yes
Executive Function	43	Average	Yes
Cognitive Flexibility	40	Average	Yes
CPT Correct Responses	40	Average	Yes
Reaction Time*	538*	Above	Yes
Reaction Time Detail			
Simple Reaction Time*	284*	Average	Yes
Choice Reaction Time Correct*	432*	Average	Yes
Shifting Attention Correct RT*	856*	Average	Yes

The Concussion Vital Signs BASELINE Report presents testing results in

1. ***Subject** (raw) **Scores***
2. ***Compared to Peers** Results can be used to evaluate or monitor an athlete's condition.*
3. ***Valid Score** results help clinicians know if the athlete gave an acceptable effort during testing.*

Neurocognitive Domain Dashboard Post-Injury Example:

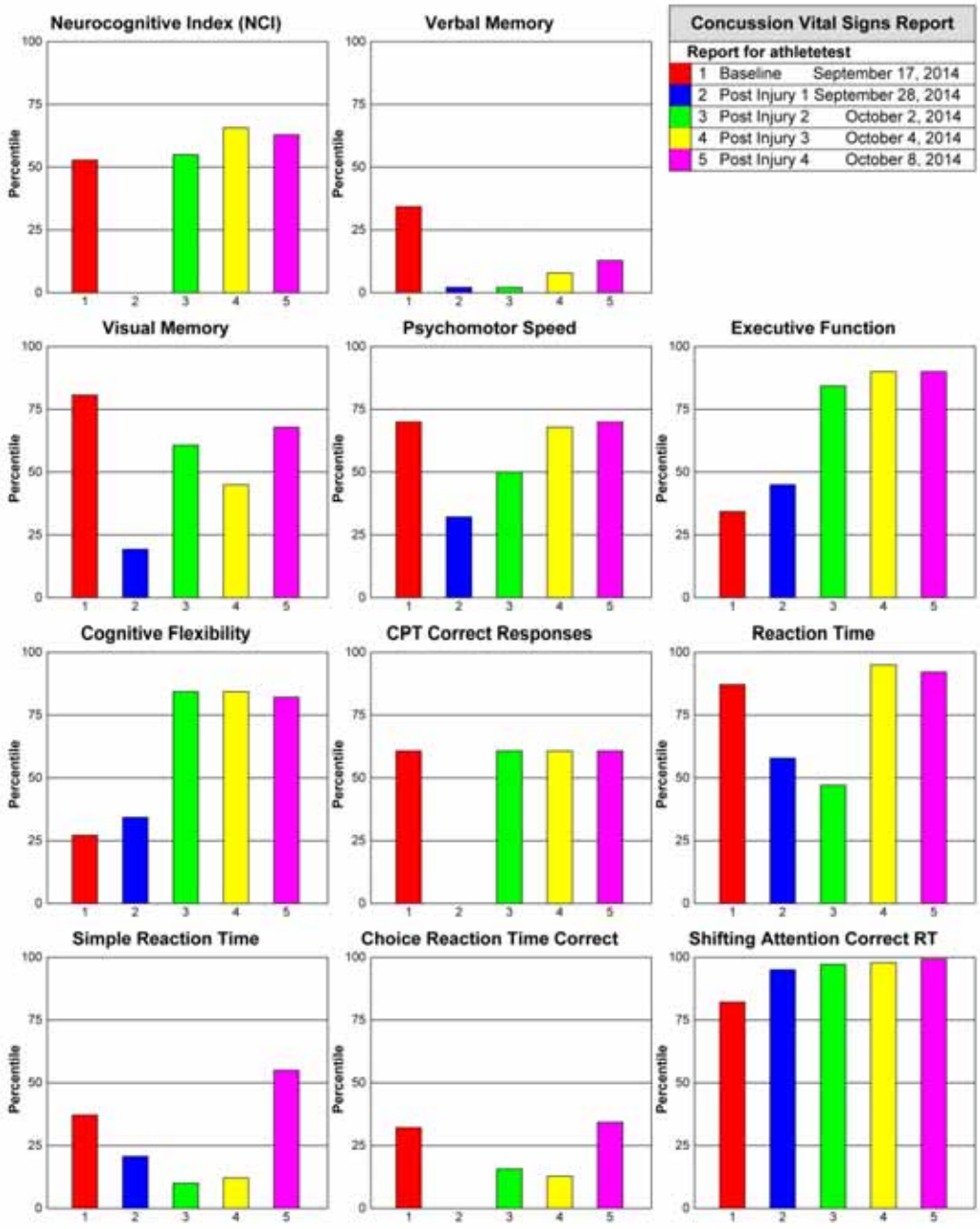
Concussion Vital Signs Post-Injury Report	
Athlete Reference/ID: athletetest	Test Date Local: October 8, 2014 12:30:45
Full Name: John Doe	Age: 18
Administrator: Head ATC	Language: English (United States)
Total Test Time: 23:01 (min:secs) for all tests in this report	Test Date GMT: October 8, 2014 19:30:45
Testing Supervision: Supervised by athletic trainer or school personnel	Testing Environment: Alone
Concussion Reference Code: 2T47GERB Used to view the most recent report or administer post-injury assessment at www.concussionvitalsigns.com	

Domain Scores	Baseline (Oct 7, 2014)			Post Injury				
	Subject Score	Compared to Peers	Valid Score	Subject Score	Compared to Peers	Valid Score	At Baseline or Better	Within 5% of Baseline
Neurocognitive Index (NCI)		Average	Yes		Average	Yes	Yes	Yes
2 Verbal Memory	51	Average	Yes	49	Below	Yes	No	Yes
Visual Memory	52	Average	Yes	48	Average	Yes	No	Yes
Psychomotor Speed	190	Average	Yes	192	Average	Yes	No	Yes
Executive Function	43	Average	Yes	59	Above	Yes	Yes	Yes
Cognitive Flexibility	40	Average	Yes	56	Average	Yes	Yes	Yes
CPT Correct Responses	40	Average	Yes	40	Average	Yes	Yes	Yes
Reaction Time*	538*	Above	Yes	514*	Above	Yes	Yes	Yes
Reaction Time Detail		1					3	
Simple Reaction Time*	284*	Average	Yes	252*	Average	Yes	Yes	Yes
Choice Reaction Time Correct*	432*	Average	Yes	420*	Average	Yes	Yes	Yes
Shifting Attention Correct RT*	856*	Average	Yes	617	Above	Yes	Yes	Yes

Notice in the example above that the athlete (1) had many average scores at his/her baseline, (2) the verbal and visual memory scores are still slightly impaired post-injury as compared to baseline, and (3) most of the scores have returned to baseline. ***A qualified health professional would refer to other clinical endpoints (symptom resolution, balance testing, neurological exam, etc.) before concluding that the athlete is able to return-to-play.***

Neurocognitive Report Evaluation Backgrounder

Longitudinal Post-Injury Report Example:



Each Concussion Vital Signs Report presents the POST-INJURY results in a graphic format that provides clinicians with a longitudinal view. **To enable a longitudinal view of the athlete's condition, the ATHLETE REFERENCE/ID must remain consistent across all their testing (Baseline and Post-Injury).** ***The entire test must be re-administered if the athlete has any "No" values in the Valid Score column.***

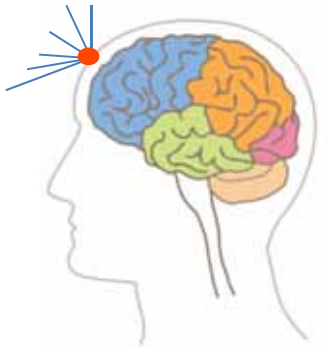
NOTE: Athletes suffering from a concussion may display low scores or deficits in different domains depending on the direction and force of the blow to the head. Not all athletes that suffer from a concussion provide clear demonstration of neurocognitive deficits. Concussion Vital Signs does not assess the cause of changes in cognitive performance. Testing results should be interpreted by a qualified health professional. ***Remember, it is better to be safe. Any athlete suspected of having a concussion should be removed from play, and then seek medical evaluation. Consult a doctor after a suspected concussion. Medical clearance should be given before return-to-play.***

Report Evaluation Question & Answers

1. **Who should interpret the Concussion Vital Signs neurocognitive test results?** ***Answer:*** State legislation and medical guidelines generally require a medical or physician release for athletes to return-to-play. Interpretation of the Concussion Vital Signs neurocognitive test results should be done by a qualified health professional. As expressed in the Consensus statement on concussion in sport held in Zurich, November 2008. "Neuropsychologists are in the best position to interpret NP tests by virtue of their background and training. However, there may be situations where neuropsychologists are not available and other medical professionals may perform or interpret NP screening tests."

2. **What does NCI (Neurocognitive Index)mean?** ***Answer:*** The Neurocognition Index – NCI, reflects the overall neurocognitive functioning of the athlete test taker. It is an average of all the domains into a global summary score. Because many concussions are complex and diagnosis is difficult, it usually requires clinicians to take a multidimensional approach to their assessment. Therefore , the NCI and the other neurocognitive domain scores should be taken in context with the symptom scores, history and physical, as well as other tests and relevant clinical endpoints.

3. **What is "Executive Functioning"?** ***Answer:*** Executive Functioning , sometimes called executive control system, is generally considered a frontal lobe (see ***blue*** section of the brain) cognitive system that controls and manages other cognitive processes. It is considered a higher-order brain function which includes attention, behavioral planning and response inhibition, and the manipulation of information in problem-solving tasks. Sometimes referred to as the "command and control" function (frontal lobe), the executive function can be viewed as the "conductor" of many cognitive skills. The SAT - Shifting Attention Test (rules, categories, rapid decision-making) results are used to calculate this frontal lobe domain.



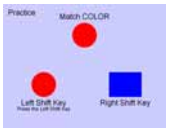
4. **Since Concussion Vital Signs has tests that measure frontal lobe cognitive function, is it a good assessment tool for attention deficit or AD/HD?** ***Answer:*** YES! CNS Vital Signs is used throughout the world as a clinical and research tool to evaluate and manage AD/HD. The tests used in AD/HD clinics are similar to the ones in the Concussion Vital Signs battery. Should an athlete score poorly after giving their best effort, in the frontal lobe domains (**Executive Function, Cognitive Flexibility**, **CPT Correct Responses**), it may be prudent to refer the student for further evaluation. CNS Vital Signs Neurocognitive tests are used extensively to help assess conditions such as AD/HD. Helping student athletes identify and effectively address their cognitive challenges can have dramatic benefits for them personally and can help them be more successful academically, athletically, and vocationally.

5. **If the student athlete does not have a baseline can he/she be given a post-injury test?** ***Answer:*** YES! Baseline testing can serve as a valuable "premorbid" (state prior to condition) point of comparison for the testing that is conducted after the concussion injury. However, even if baseline neuropsychological testing has not been performed, post-injury neurocognitive testing can still be a very useful source of information about the effects of the concussion. Using standardized PERCENTILE scores can help clinicians identify poor cognitive function performance which can be an important indicator that the brain is not working normally. However, there are many reasons test performance can be abnormal, including concussion.

6. **What combinations of what test scores should cause school personnel/clinicians to pause and look for some underlying condition?** ***Answer:*** Every student athlete is different; there is no "one-size fits all" answer to assessing concussion. Neurocognitive domain score performance may vary depending on a number of factors that include testing effort, type of blow to the head, location or site of the blow, and the patient's individual history. The Consensus statement on concussion in sport held in Zurich, November 2008 states "…the assessment of cognitive function should be an important component in any return to play protocol. It must be emphasized, however, that NP assessment should not be the sole basis of management decisions; rather it should be seen as an aid to the clinical decision-making process in conjunction with a range of clinical domains and investigational results."

Neurocognitive Tests

Concussion Vital Signs contains seven venerable neuropsychological tests and the clinical domains, scored from the tests, measures the speed and accuracy of an athletes brain or neurocognitive function.

CORE Tests		Neurocognitive Function	Test Description
Verbal Memory (VBM) *Approx. 3 Minutes*		■ Verbal Learning ■ Memory for Words ■ Word Recognition ■ Immediate and Delayed Recall	VBM measures recognition memory for WORDS. Fifteen words are presented, one by one, on the screen every two seconds. For immediate recognition, the participant has to identify those words nested among fifteen new words. Then, after six more tests, there is a delayed recognition trial.
Visual Memory (VIM) *Approx. 3 Minutes*		■ Visual Learning ■ Memory for Geometric Shapes ■ Geometric Shapes Recognition ■ Immediate and Delayed Recall	VIM measures recognition memory for FIGURES. Fifteen geometric figures are presented, one by one, on the screen. For immediate recognition, the participant has to identify those figures nested among fifteen new figures. Then, after five more tests, there is a delayed recognition trial.
Finger Tapping (FTT) *Approx. 2 Minutes*		■ Motor Speed ■ Fine Motor Control	FTT test requires athletes to press the Space Bar with their right index finger as many times as they can in 10 seconds. They do this once for practice, and then there are three test trials. The test is repeated with the left hand.
Symbol Digit Coding (SDC) *Approx. 4 Minutes*		■ Information Processing Speed ■ Complex Attention ■ Visual-Perceptual Speed ■ Information Processing Speed	SDC test consists of serial presentations of screens, each of which contains a bank of eight symbols above and eight empty boxes below. The participant types in the number that corresponds to the symbol that is highlighted. Only the digits from 2 through 9 are used; this is to avoid the confusion between “1” and “l” on the keyboard. The computer program does not allow a person to use a numerical pad. This prevents the potential for a distinct advantage for those who are skilled at using the numerical pad or for those that are right- versus left-handed.
Stroop Test (ST) *Approx. 4 - 5 Minutes*		■ Executive Function ■ Simple and Complex Reaction Time ■ Speed-Accuracy Trade-Off ■ Information Processing Speed ■ Inhibition / Disinhibition	Stroop test has three parts. In the first part, the words RED, YELLOW, BLUE, and GREEN (printed in black) appear at random on the screen, and the participant presses the space bar as soon as the athlete sees the word. In the second part, the words RED, YELLOW, BLUE, and GREEN appear on the screen, printed in color. The participant is asked to press the space bar when the color of the word matches what the word says. In the third part, the words RED, YELLOW, BLUE, and GREEN appear on the screen, printed in color. The participant is asked to *press the space* bar when the color of the word does not match what the word says.
Shifting Attention (SAT) *Approx. 2.5 Minutes*		■ Executive Function: Shifting Sets ■ Reaction Time ■ Information Processing Speed ■ Speed-Accuracy Trade-off	SAT test is a measure of ability to shift from one instruction set to another quickly and accurately. Participants are instructed to match geometric objects either by shape or by color. Three figures appear on the screen, one on top and two on the bottom. The top figure is either a square or a circle. The bottom figures are a square and a circle. The figures are either red or blue (mixed randomly). The participant is asked to match one of the bottom figures to the top figure. The rules change at random (i.e., match the figures by shape, for another, by color).
Continuous Performance (CPT) *Approx. 5 Minutes*		■ Sustained Attention ■ Choice Reaction Time ■ Impulsivity	CPT test is a measure of vigilance or sustained attention or attention over time. The athlete is asked to respond to the target stimulus “B” but not to any other letter. The stimuli are presented at random.

The entire test must be re-administered if the athlete has any "No" values in the Valid Score column. A percentile Score of 50% is AVERAGE.

Neurocognitive Clinical Domains Measured

Concussion Vital Signs valid and reliable clinical domains assist in the evaluation and management of sports related concussions. The percentile scores come from 1900+ peer norms from ages 8 to 90.

Clinical Domains	Clinical Domain Score Calculations	Clinical Domain Description
Neurocognitive Index (NCI)	The average of the Composite Memory, Psychomotor Speed, Cognitive Flexibility, Reaction Time, and Complex Attention Domains.	**Measure:** An average score derived from the domain scores or a general assessment of the overall neurocognitive status of the patient. **Relevance:** Summary views tend to be most informative when evaluating a population, a condition category, and outcomes.
Verbal Memory	***Verbal Memory*** is the score for the Verbal Memory Test. VBM Correct Hits Immediate + VBM Correct Passes Immediate + VBM Correct Hits Delay + VBM Correct Passes Delay	**Measure:** How well subject can recognize, remember, and retrieve words. **Relevance:** Remembering a scheduled test, recalling an appointment, taking medications, and attending class.
Visual Memory	***Visual Memory*** is the score for the Visual Memory Test. VIM Correct Hits Immediate + VIM Correct Passes Immediate + VIM Correct Hits Delay + VIM Correct Passes Delay	**Measure:** How well subject can recognize, remember and retrieve geometric figures. **Relevance:** Remembering graphic instructions, navigating, operating machines, recalling images, and/or remember a calendar of events.
Psychomotor Speed	***Psychomotor Speed*** is the combined score for both the Finger Tapping and the Symbol Digit Coding Test. FTT Right Taps Average + FTT Left Taps Average + SDC Correct Responses	**Measure:** How well a subject recognizes and processes information i.e., perceiving, attending/responding to incoming information, motor speed, fine motor coordination, and visual-perceptual ability. **Relevance:** Distractibility, fitness-to-drive, occupation issues, obsessive concern with accuracy and detail.
Executive Functioning	***Executive Function*** reflects performance on the Shifting Attention Test. SAT Correct Responses - SAT Errors	**Measure:** How well a subject recognizes set shifting and manages multiple tasks simultaneously. **Relevance:** Ability to sequence tasks and manage multiple tasks simultaneously as well as tracking and responding to a set of simple instructions.
Cognitive Flexibility	***Cognitive Flexibility*** reflects performance on the Shifting Attention and Stroop Tests. SAT Correct Responses - SAT Errors - Stroop Commission Errors	**Measure:** How well subject is able to adapt to rapidly changing and increasingly complex set of directions and/or to manipulate the information. **Relevance:** Reasoning, switching tasks, decision-making, impulse control, strategy formation, attending to conversation.
CPT Correct Responses	***CPT Correct Responses*** is the number of correct responses on the Continuous Performance Test.	**Measure:** Ability to track and respond to information over lengthy periods of time and/or perform mental tasks requiring vigilance quickly and accurately. **Relevance:** Self-regulation and behavioral control.
Reaction Time*	***Reaction Time**** is the average reaction time on parts 2 and 3 of the Stroop Tests. (ST Complex Reaction Time Correct + Stroop Reaction Time Correct) / 2	**Measure:** How quickly the subject can react, in milliseconds, to a simple and increasingly complex direction set. **Relevance:** Driving a car, attending to conversation, tracking and responding to a set of simple instructions, taking longer to decide what response to make.
Reaction Time Detail		
Simple Reaction Time*	***Simple Reaction Time**** is the average reaction time on part 1 of the Stroop Tests. Time required to press the spacebar from the time a word first appears on the display. Average Reaction Time on Part 1 of the Stroop Test	
Choice Reaction Time Correct*	***Choice Reaction Time Correct**** is the average correct reaction time on the Continuous Performance Test. Time required to press the spacebar from the time a B first appears on the display.	
Shifting Attention Correct RT*	***Shifting Attention Correct RT**** is the average correct reaction time on the Shifting Attention Test.	

An * denotes that "lower is better" in the Subject Score column, otherwise higher scores are better. With Percentile scores, higher is always better.

Concussion Symptom Scale Report

Concussion Vital Signs Concussion Symptom Scale Post-Injury Example:

Post-Injury Concussion Symptom Scale	
Athlete Reference/ID: athletetest	Test Date Local: October 8, 2014 12:30:45
Full Name: John Doe	Age: 18
Administrator: Head ATC	Language: English (United States)
Total Test Time: 23:01 (min:secs) for all tests in this report	Test Date GMT: October 8, 2014 19:30:45
Testing Supervision: Supervised by athletic trainer or school personnel	Testing Environment: Alone
Concussion Reference Code: 2T47GERB Used to view the most recent report or administer post-injury assessment at www.concussionvitalsigns.com	

Rates how this symptom is currently experienced, Absent (0 - None) or Present (1 - Mild to 6 - Severe).

		Baseline (Sep 17 2014)		Post-Injury	
CSI - Symptoms*		**Absent**	**Present**	**Absent**	**Present**
1	Headache	0		0	
3	Nausea	0		0	
5	Poor balance	0		0	
6	Dizziness	0		0	
7	Fatigue or loss of energy	0		0	
9	Drowsiness or feeling sleepy	0		0	
14	Feeling like "In-a-fog"	0		0	
15	Difficulty concentrating		2	0	
16	Difficulty remembering	0		0	
10	Sensitivity to light	0		0	
11	Sensitivity to noise	0		0	
17	Blurred vision	0		0	
24	Feeling slowed down	0		0	

		Baseline (Oct 7, 2014)		Post-Injury	
Additional Concussion Symptoms**		**Absent**	**Present**	**Absent**	**Present**
8	Difficulty falling or staying asleep		2	0	
12	Irritability, easily annoyed or frustrated	0		0	
13	Sadness	0		0	
2	Feeling numbness or tingling	0		0	
18	Ringing in the ear	0		0	
19	Neck pain	0		0	
20	More Emotional	0		0	
21	Feeling Nervous	0		0	
22	Feeling anxious or tense	0		0	
23	Feeling Confused	0		0	
4	Vomiting	0		0	

Do Symptoms get worse with Physical Activity: No

Do Symptoms get worse with Mental or Academic Activity: No

Acknowledgements: Concussion Vital Signs Symptom Scale contains a representative sample of well recognized sports concussion symptoms similar to those found in the CSI - Concussion Symptom Inventory, SCAT2, and the Neurobehavioral Symptom Inventory.

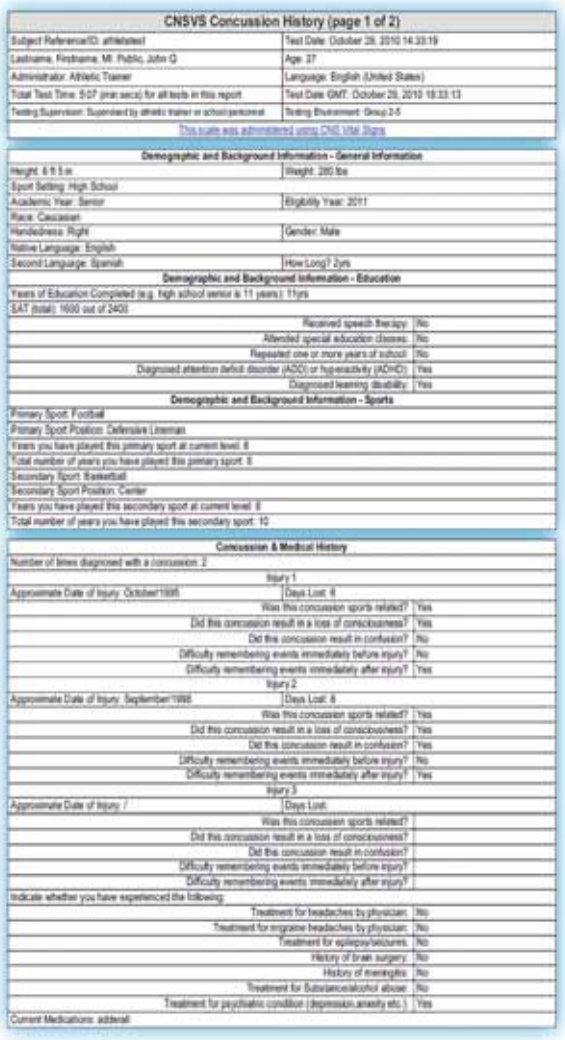
* (CSI) Concussion Symptom Inventory: An Empirically Derived Scale for Monitoring Resolution of Symptoms Following Sport-Related Concussion; Christopher Randolph, Scott Millis, William B. Barr, Michael McCrea, Kevin M. Guskiewicz, Thomas A. Hammeke, James P. Kelly; Archives of Clinical Neuropsychology 24 (2009) 219-229; Public Domain

** SCAT2 - Sport Concussion Assessment Tool 2: This tool has been developed by a group of international experts at the 3rd International Consensus meeting on Concussion in Sport held in Zurich, Switzerland in November 2008. British Journal of Sports Medicine, 2009, volume 43, supplement 1.

*** Neurobehavioral Symptom Inventory: Cicerone,KD: J Head Tr Rehabil 1995;10(3):1-17

Concussion History

Concussion Vital Signs Concussion History Report Example:



CNSVS Concussion History (page 1 of 2)

Subject Reference/ID: athletetest	Test Date: October 29, 2010 14:33:19
Lastname, Firstname, MI: Public, John Q	Age: 37
Administrator: Athletic Trainer	Language: English (United States)
Total Test Time: 5:07 (min:secs) for all tests in this report	Test Date GMT: October 29, 2010 18:33:13
Testing Supervision: Supervised by athletic trainer or school personnel	Testing Environment: Group 2-5
This scale was administered using CNS Vital Signs	

Demographic and Background Information - General Information	
Height: 6 ft 5 in	Weight: 280 lbs
Sport Setting: High School	
Academic Year: Senior	Eligibility Year: 2011
Race: Caucasian	
Handedness: Right	Gender: Male
Native Language: English	
Second Language: Spanish	How Long? 2yrs
Demographic and Background Information - Education	
Years of Education Completed (e.g. high school senior is 11 years): 11yrs	
SAT (total): 1600 out of 2400	
Received speech therapy:	No
Attended special education classes:	No
Repeated one or more years of school:	No
Diagnosed attention deficit disorder (ADD) or hyperactivity (ADHD):	Yes
Diagnosed learning disability:	Yes
Demographic and Background Information - Sports	
Primary Sport: Football	
Primary Sport Position: Defensive Lineman	
Years you have played this primary sport at current level: 8	
Total number of years you have played this primary sport: 8	
Secondary Sport: Basketball	
Secondary Sport Position: Center	
Years you have played this secondary sport at current level: 8	
Total number of years you have played this secondary sport: 10	

Concussion & Medical History		
Number of times diagnosed with a concussion: 2		
Injury 1		
Approximate Date of Injury: October/1995	Days Lost: 8	
Was this concussion sports related?		Yes
Did this concussion result in a loss of consciousness?		Yes
Did this concussion result in confusion?		No
Difficulty remembering events immediately before injury?		No
Difficulty remembering events immediately after injury?		Yes
Injury 2		
Approximate Date of Injury: September/1998	Days Lost: 8	
Was this concussion sports related?		Yes
Did this concussion result in a loss of consciousness?		Yes
Did this concussion result in confusion?		Yes
Difficulty remembering events immediately before injury?		No
Difficulty remembering events immediately after injury?		Yes
Injury 3		
Approximate Date of Injury: /	Days Lost:	
Was this concussion sports related?		
Did this concussion result in a loss of consciousness?		
Did this concussion result in confusion?		
Difficulty remembering events immediately before injury?		
Difficulty remembering events immediately after injury?		
Indicate whether you have experienced the following:		
Treatment for headaches by physician:		No
Treatment for migraine headaches by physician:		No
Treatment for epilepsy/seizures:		No
History of brain surgery:		No
History of meningitis:		No
Treatment for Substance/alcohol abuse:		No
Treatment for psychiatric condition (depression,anxiety etc.):		Yes
Current Medications: adderall		

Demographic and Background Information - Education

- Years of Education Completed (e.g. high school senior is 11 years):
- SAT - ACT (total):
- Received Speech Therapy:
- Attended Special Education Classes:
- Repeated One or More Years of School:
- Diagnosed Attention Deficit Disorder (ADD) or (ADHD):
- Diagnosed Learning Disability:

Demographic and Background Information - Sports

- Primary Sport:
- Primary Sport Position:
- Years you have played this primary sport at current level:
- Total number of years you have played this primary sport:
- Secondary Sport:
- Secondary Sport Position:
- Years you have played this secondary sport at current level:
- Total number of years you have played this secondary sport:

Concussion & Medical History

- Number of times diagnosed with a concussion:
- Injury 1 ***(Up to 3 Injury's can be reported)***
- Approximate Date of Injury:
- Days Lost:
- Was this concussion sports related?
- Did this concussion result in a loss of consciousness?
- Did this concussion result in confusion?
- Difficulty remembering events immediately before injury?
- Difficulty remembering events immediately after injury?

Indicate whether you have experienced the following:

- Treatment for Headaches by Physician:
- Treatment for Migraine Headaches by Physician:
- Treatment for Epilepsy / Seizures:
- History of Brain Surgery:
- History of Meningitis:
- Treatment for Substance / Alcohol abuse:
- Treatment for Psychiatric Condition (depression / anxiety etc.):
- Current Medications:

Concussion Vital Signs Enables the Systematic Documentation of Important Clinical Endpoints Helping to Support Improved Return-to-Play Decision Making