

Vestibular/Ocular-Motor Screening

(VOMS) Adapted from [Mucha A1](#), [Collins MW2](#), [Elbin RJ3](#), [Furman JM4](#), [Troutman-Enseki C1](#), [DeWolf RM2](#), [Marchetti G5](#), [Kontos AP6](#).

Total time to administer is 5 minutes

- 1. Baseline Symptoms assessed via a post concussion symptom scale.**
- 2. Patient rates changes in symptoms on 0 - 10 scale for symptom provocation during any of the following:**

Smooth Pursuit, Saccades Horizontal, Saccades Vertical, Convergence, VOR Horizontal, VOR Vertical and Visual Motion Sensitivity

SMOOTH PURSUIT

Patient to follow a moving target while the patient and the examiner are seated.

Examiner holds a target at a distance of 3 ft from the patient.

The patient is instructed to maintain focus on the target as the examiner moves the target smoothly in the horizontal direction 1.5 ft to the right and 1.5ft to the left of midline. One

repetition is complete when target moves back and forth to the starting position and 2 repetitions are performed.

Horizontal: Target is moved at a rate of 2 seconds for each direction (right to left and left to right).

Vertical: Repeat at the same rate (2 seconds) moving the target vertically 1.5 ft above and 1.5ft below midline for 2 complete repetitions up and down.

Record: Symptom provocation for Headache, Dizziness, Nausea, Fogginess on a 0-10 scale.

SACCADES

Horizontal and Vertical

Patient to follow a target between two points as quickly as possible.

Patient and the examiner are seated.

Horizontal: Examiner holds two single points (fingertips/ targets)

Horizontally at a distance of 3 ft from patient and 1.5 ft to the right and 1.5 ft to the left of midline so that the patient must gaze 30 degrees to the left and 30 degrees to the right. Once repetition is complete when the eyes move back and forth to the starting position. 10 repetitions are to be completed.

Vertical: Repeat the test with 2 points held vertically at a distance of 3 ft from the patient and 1.5 ft above and 1.5 ft below midline so that the patient must gaze 30 degrees upward and 30 degrees downward.

Record for each direction: Headache, Dizziness, Nausea, Fogginess ratings after each test.

NEAR POINT OF CONVERGENCE

Measure the ability to view a near target without double vision. The patient is seated and wearing corrective lenses (if needed).

Examiner sits in front of the patient and observes their eye movement during this test.

Patient focuses on a small target (approximately 14 font size) at arm's length and slowly brings it toward the tip of their nose. The patient is instructed to stop moving the target when they see two distinct images or when the examiner observes an outward deviation of one eye.

The distance in cm between the target and the tip of the nose is measured and recorded (**ABNORMAL >_ to 6cm**)

Repeat 3 times and record measures each time along with the symptom ratings for Headache, Dizziness, Nausea and Fogginess.

VESTIBULO-OCULAR REFLEX (VOR)

Horizontal and Vertical

Assess the ability to stabilize vision as the head moves.

The patient and the examiner is seated. The examiner holds a target of approximately 14 point font size in front of the patient in midline at a distance of 3 ft.

Use a metronome to help with speed at about 180 beats/min.

Horizontal VOR: Patient rotates head horizontally and maintains focus on the target.

*Amplitude of movement is 20 degrees to each side.

*Perform 10 revolutions.

Vertical VOR: Repeated with the patient moving their head vertically.

*Perform 10 revolutions.

***Record after each test (Horizontal and Vertical VOR):
Headache, Dizziness, Nausea and Fogginess ratings.***

This test had the highest symptom provocation of 61%.

VISUAL MOTION SENSITIVITY

Test visual motion sensitivity and the ability to inhibit vestibular -induced eye movements using vision.

Patient stands with feet shoulder width apart, facing a busy area of the clinic/field/court (guard patient appropriately).

Patient holds arm outstretched and focuses on their thumb. Maintaining focus on their thumb, the patient rotates together as a unit, their head, eyes and trunk at an amplitude of 80 degrees to the left and 80 degrees to the right.

Use a metronome to ensure the speed of rotation is maintained at 50 beats/min (one beat in each direction).

5 revolutions: One revolution is from right to left to the starting position is one revolution.

Record: Headache, Dizziness, Nausea and Fogginess ratings.

VOMS SCORING SHEET

Symptoms on a 0-10 point scale

Vestibular/ Oculomotor	Type	Not Tested	Headache	Dizziness	Nausea	Fogginess	Comments
Baseline Symptoms							
Smooth Pursuit							
Saccades (Horizontal)							
Saccades (Vertical)							
Convergence (Near Point)							Score#1 _____cm Score#2 _____cm Score#3 _____cm
VOR Horizontal							
VOR Vertical							
Visual Motion Sensitivity							