



CAROLINA

Sports Concussion Clinic

CFPSM Vestibular Ocular Motor and Balance Evaluation

(adapted from UPMC Vestibular Ocular Motor Screen)

Mucha, Collins, Elbin, Furman, Troutman-Enseki, DeWolf, Kontos (in press)

Assess symptoms of headache, dizziness, nausea, fogginess (scale of 1-6) prior to administering this assessment (baseline), as well as after each component.

Smooth Pursuits

- Patient and examiner seated
- 3ft distance between patient and examiner
- Midpoint is at patient's nose. Use fingertip as target, move horizontally 1.5 feet to the left, then back to midline and then 1.5 feet to the right in smooth motion. Should take two seconds to complete. Repeat two times and then do the same vertically (1.5 ft above midline to 1.5 ft below midline x 2)
- Assess headache, dizziness, nausea, fogginess

Horizontal Saccades

- Patient and examiner remain seated
- 3ft distance between patient and examiner
- Examiner's fingertips serve as targets; held 3ft apart
- Patient instructed to look side to side for a total of 10 reps (head stays still, only eyes move)
- Assess headache, dizziness, nausea, fogginess

Vertical Saccades

- Patient and examiner remain seated
- 3ft distance between patient and examiner
- Examiner fingertips serve as targets, held 3 ft apart (1 ½ ft above and below midline)
- Patient instructed to look up and down for a total of 10 reps (head stays still, only eyes move)
- Assess headache, dizziness, nausea, fogginess

Horizontal VOR (vestibular ocular reflex)

- Patient and examiner remain seated
- Examiner holds 14pt font target 3 ft from pt; eyes remain fixed on target
- Head moves back and forth 20 degrees each side (metronome set at 180 bpm)
- 10 reps @ 180bpm on metronome
- Assess headache, dizziness, nausea, fogginess

Vertical VOR (vestibular ocular reflex)

- Patient and examiner remain seated
- Examiner holds 14pt font target 3ft from pt; eyes remain fixed on target
- Head moves up and down 20 degrees up and 20 degrees down (metronome set at 180 bpm)
- 10 reps @ 180 bpm on metronome
- Assess headache, dizziness, nausea, fogginess

Visual Motor Sensitivity

- Patient stands, examiner stands just behind and to the side to allow patient to move freely but examiner can act as spotter
- Patient arm extended with thumb up
- Trunk, head, eyes move as one unit, rotating 80 degrees to the right and 80 degrees to the left
- 10 reps @ 50 bpm
- Assess headache, dizziness, nausea, fogginess

Accommodation

- Patient and examiner seated
- Target is 14 point font
- Patient covers R eye with hand
- Patient hold target and moves slowly towards nose
- When patient reports target is blurry, examiner takes measurement (from target to tip of nose)
- Complete three times, then repeat with L eye
- Assess HA, dizziness, nausea, fogginess

Convergence

- Patient and examiner seated
- Target is 14 point font
- Patient holds target, slowly moves towards face
- Upon target becoming double OR witnessed exophoria, examiner takes measurement (target to tip of nose)
- Complete three times
- Assess HA, dizziness, nausea, fogginess

Balance

- Patient stands on stable surface, feet together, hands on hips with eyes closed for 20-30 seconds
- Patient then stands in tandem stance (one foot in front of the other, heel touching toe) on stable surface with eyes closed and hands on hips. Patient holds this position for 20-30 seconds. Feet are then changed positions where opposite foot in front.
- All three stances are repeated on an unstable surface (feet together, tandem, opposite tandem)

*When this assessment is performed on the sideline as part of an acute evaluation of a potential sports concussion, we recommend following the same protocol as above, though typically both the examiner and athlete will be standing. Of note, the components of this evaluation that have been validated include: smooth pursuits, horizontal/vertical saccades, horizontal/vertical VOR, visual motor sensitivity, and convergence. This was performed in clinic setting.

CSCC Vestibular/Ocular-Motor Screening for Concussion (adapted from UPMC VOMS)						
Vestibular/Ocular Motor Test:	Not tested:	Headache 0-10	Dizziness 0-10	Nausea 0-10	Fogginess 0-10	Comments:
Baseline (pre VOMS) symptoms	N/A					
Smooth Pursuits						
Saccades - Horizontal						
Saccades - Vertical						
VOR - Horizontal						
VOR - Vertical						
Visual Motor Sensitivity Test						
Accommodation						RIGHT LEFT
						_____cm _____cm
						_____cm _____cm
						_____cm _____cm
Convergence						Near Point
						_____cm
						_____cm
						_____cm