A Comprehensive Approach to Concussion Assessment: Sideline Evaluation

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Primary Survey

- Airway
- Breathing
- Circulation
- Basic life support
Secondary Survey

- History
- Observation
- Palpation
- Stress Tests
- Active / Passive ROM
- Strength Testing
- Functional Testing
History

- Determine Symptoms
  - Symptom Checklist vs. Graded Symptom Scale
- Determine Level of Consciousness
- Determine presence or absence of amnesia
Symptom Checklists and Scales

- **Symptom Checklist**
  - Check whether a symptom is present (Y/N)

- **Symptom Scale**
  - Allows athlete to describe the extent to which they are experiencing the symptom
  - Athlete ranks the severity of the symptom using a Likert scale
  - Overall score of injury severity
    - # symptoms rated
    - Summed symptom score
Level of Consciousness

- Alert
- Lethargic
- Stuporous
- Semi-comatose
- Comatose
Amnesia

- Retrograde
- Anterograde
- Ask questions of recent memory
- Do not ask questions of orientation
Observation

- Watch athlete closely throughout the evaluation
- Deformities or abnormal positioning
- Pupillary signs
  - Size
  - Response to light
  - Movement (nystagmus)
- Respirations
- Aphasia
  - Difficulty finding or saying the right words
Palpation

- Establish baseline measures of
  - Pulse
  - Blood pressure
- Palpate for signs of trauma
  - Painful areas
  - Deformities
  - Swelling
Stress Tests

- Used to establish baseline and monitor progress as the athlete recovers
- Coordination
- Cognitive functioning
- Cranial nerve assessment
Coordination

- Heel to opposite knee
- Finger to nose
- Romberg test
- Balance Error Scoring System

Difficult to quantify and use in serial assessments
Cognitive Functioning

- Mental status tests are feasible for the sideline, need little training or equipment
- Repeat digits backwards or forwards
- Serial 3’s or 7’s
- Months of year in reverse (MOYR)
- Days of week in reverse (DOWR)
- Standardized Assessment of Concussion (SAC)
Cranial Nerve Assessment

- Optic
  - Visual acuity
- Ocular
  - Pupil reactions
- Trochlear
  - Eye movements
- Facial
  - Smile, grimace
Active / Passive ROM

- Cervical ROM
  - Flexion
  - Extension
  - Lateral flexion
  - Rotation
Strength Testing

- Assess upper extremity myotomes
  - C1-C2: cervical flexion
  - C3: lateral cervical flexion
  - C4: shoulder shrug
  - C5: shoulder abduction
  - C6: elbow flexion, wrist extension
  - C7: elbow extension, wrist flexion
  - C8: ulnar deviation, thumb extension, finger flexion and abduction
Functional Testing

- Exertional tests
  - Evidence of early post-concussion symptoms
  - Increase in symptom severity
- Valsalva maneuver
- Biking, jogging, short sprints
- Progression to sport-specific activities
Return to Play Decision

- May consider RTP on same day if:
  - No LOC
  - No Amnesia
  - Asymptomatic at rest
  - Asymptomatic following exertion
  - Pass all functional tests
Return to Play Decision

- Do NOT consider RTP if:
  - Any sign/symptoms is still present
  - Any initial LOC or amnesia
    - Instructions to parents
    - Observation and follow-up

- Persistence of Sy = altered neurotransmitter function
Return to Play Guidelines

- Consider the following:
  - Athlete’s previous history of concussion
  - Type of sport (contact vs non-contact)
  - Availability of experienced personnel
    - Observe & monitor athlete during recovery
  - LOC
    - Any LOC should not be allowed to return to play the same day
Return to Play Guidelines

- Candidates for same day return to play
  - Asymptomatic for 20-minutes
  - No associated Sy at rest
  - No associated Sy during functional testing

- Athlete should be supervised for at least next 24-hours
  - Take home instructions
Return to Play

- Progression that begins when asymptomatic
- No S&S at rest and exertion
- Return to baseline function on adjunct tests
- Restricted activity (sport specific) for the first few days following the injury
- If still asymptomatic can move to unrestricted
- After recurrent injury withhold for an extended period of time (~3 days) after symptom resolution
Thank You