Figure 1. Process for Screening for Appropriateness of PT Concussive Examination

Patient with suspected concussive event

Screen for indicators of emergency medical condition(s) via observation, examination and patient and family/witness interview (Sidebar 1)

- Urgent/emergent conditions identified?
  - Yes
    - Refer for emergency medical assessment and treatment
  - No
    - Screen for indicators of concussion (Sidebar 2)

- Signs and symptoms consistent with diagnosis of concussion?
  - Yes
    - Determine appropriateness of physical therapy concussion examination based on comprehensive patient intake interview and screen (Sidebar 3)
  - No
    - Evaluate for other potential physical therapy diagnoses and follow standard of care procedures

- Appropriate for physical therapy concussion examination?
  - Yes
    - Proceed to Physical Therapy Examination Decision Tree (Figure 2)
  - No
    - Provide education about concussion and refer for additional evaluation and services as indicated

Sidebar 1. Indicators for Immediate Emergency Medical Evaluation
- Declining level or loss of consciousness, cognition, or orientation
- New onset of pupillary asymmetry, seizures, repeated vomiting or other focal neurologic signs
- Severe or rapidly worsening headache or neurologic deficits
- Possible undiagnosed skull fracture
- Serious cervical spine fracture, dysfunction or pathology (e.g., vertebralbasilar artery insufficiency, cervical ligamentous instability, signs of central cord compression)

Sidebar 2. Concussion Diagnosis Criteria:
A direct blow to the head, face, neck, or an impulsive force elsewhere on the body that is transmitted to the head followed by any of the following:
- Any period of decreased orientation or loss of consciousness
- Post-traumatic amnesia
- Any alteration in cognition or mental state immediately related to the concussive event: confusion, disorientation, slowed thinking/processing, problems with attention/concentration, forgetfulness, decreased executive control
- Physical symptoms: headache, dizziness, balance disorders, nausea, vomiting, fatigue, sleep disturbance, blurred vision, sensitivity to light, hearing difficulties, tinnitus, sensitivity to noise, seizure, transient neurological abnormalities, numbness, tingling, neck pain, exertional intolerance
- Emotional/behavioral symptoms: depression, anxiety, agitation, irritability, impulsivity, aggression
- Glasgow Coma Scale (best available score in first 24 hours) of 13-15
- Brain imaging (if available) is normal
- Signs/symptoms not otherwise explained by drug, alcohol, or medication
- Symptoms are present that cannot be explained by pre-injury history of medical diagnoses or, if pre-injury diagnoses were present, the patient reports or is observed to demonstrate an exacerbated state of symptoms

Sidebar 3. Patient Intake Process and Interview
- Type, severity, frequency and irritability of concussion-related symptoms
- Pre-injury medical history with emphasis on: previous concussions or brain injuries, medical conditions that could result in/present with symptoms similar to concussion-related symptoms (e.g., learning challenges or disabilities, mood or emotional disorders, depression, frequent headaches), history of personal or familial migraine
- Any conditions or diseases that would limit or serve as a contraindication for comprehensive physical therapy evaluation or interventions
- Details regarding injury, including mechanism of injury and early signs and symptoms associated with the injury
- Medical management strategies implemented since the injury, reflection on things that seem to result in worsening or improvement of symptoms
- Physical function goals, priorities, and perceived limitations
- Mental health screens for referral needs
Determine and document:
- Patient’s impairment profiles and irritability levels (Sidebars 1 and 2)
- Potential headache type in accordance with the International Classification of Headache Disorders
- Self-management capabilities and other psychological and sociological factors for recovery
- Need for follow-up testing
- Plan for outcome measure administration

Proceed to Physical Therapy Plan of Care and Implementation Decision Tree (Figure 3)

Sidebar 1. Impairment Domains
- Cervical musculoskeletal impairments
- Vestibulo-ocular impairments
- Autonomic Dysfunction/exertional tolerance impairments
- Motor function impairments

Sidebar 2. Irritability Considerations
- Frequency of symptom provocation
- Vigor of movement required to reproduce symptom(s)
- Severity of symptoms once provoked
- How quickly and easily symptoms are provoked
- What factors ease the symptoms
- How much, how quickly, and how easily the symptoms resolve

Patient appropriate for physical therapy examination

Reports neck pain at rest or with movement? Yes

Examine for cervical musculoskeletal impairments
- Provide basic interventions as indicated for pain relief to support additional testing
- Proceed with additional tests as indicated and tolerated

Reports dizziness and/or headache at rest or with movement? Yes

Examine/Evaluate for cervical musculoskeletal, vestibulo-ocular, and orthostatic hypotension/autonomic impairments that may contribute to dizziness and/or headache in order from the anticipated least to most irritable
- Provide basic interventions as indicated for symptom relief to support additional testing
- Delay tests until future session as needed due to patient tolerance
- Proceed with assessment of motor function impairments per patient tolerance

No

Strategically plan and sequence examination procedures based on symptom types and levels of irritability

Determine probable movement-related impairments (Sidebar 1) and levels of irritability (Sidebars 2)
Figure 3. Development and Implementation of a Physical Therapy Plan of Care for a Concussive Event