**Title and Focus of Activity:** Traumatic Brain Injury Rehabilitation Part A: Physical Therapy Examination using Standardized Patients *Examination*

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**Course Information:** Neurological Rehabilitation II; 3 credits (including lab and lecture); Spring semester of the last academic year of the program. Students have completed Neuroanatomy, Neurophysiology, Motor Development, Fundamentals of Neurologic Examination, and Neurological Rehabilitation I prior to this course. The course is concurrent with Prosthetics/Orthotics course.

**Learning Activity Description:** Context: In the lecture portion of this unit on Traumatic Brain Injury (TBI), the etiology, pathophysiology, mechanism of injury, medical management, and physical therapy management are presented. In the corresponding lab sessions the students practice examination techniques for patients with TBI.

Standardized patients (SPs) are used to simulate clinical cases. Two lab sessions are included in this TBI examination learning activity. In the first 2-hour lab session, students examine a SP with TBI in a small group. During the second 2-hour lab, students provide a presentation to their peers about their examination findings, evaluation, diagnosis, prognosis and plan of care, with the SP present for the demonstration. There are 3 clinical case scenarios. Each is the same patient at a different phase of recovery post TBI and in a different rehabilitation setting.

At Ithaca College there are 90 students per cohort and these students are divided into 3 lab sections (30 students per section) with 3 lab instructors. Each lab instructor oversees 2 groups of 5 students who receive the same clinical case.

Prior to Lab 1: Students are assigned to groups and to one of the cases listed below (see Appendix 1). Students are responsible for reading the textbook, reading their assigned case, and answering the critical thinking questions. These patient cases are each a description of the same patient at a different time, stage of recovery, and in a different treatment setting. (cases are written generically as male and are adjusted based on the SP playing the case.)

SP Training: Prior to the lab sessions, the instructors train at least 8 SPs. The SPs are students at Ithaca College in the Theatre Arts Program. Six of these students are trained to portray individuals with TBI at various stages of recovery, and 2 students are trained to portray a family member of the low functioning patient. Two 1-hour sessions are spent with the SPs prior to the examination session. The faculty members provide a lecture to the SPs about brain injury, the typical clinical presentation of an individual after brain injury, and the typical stages of cognitive recovery after brain injury. Afterwards, each SP is provided their case and individually coached on the physical, cognitive, and affective presentation of the case. The instructor shows the SP the examination procedures students are likely to perform and instructs the SP on how to appropriately respond. In addition, the instructor tells the SP how they would respond to various questions and clinical scenarios. For example, the SP is instructed in how muscle tone presents and practices how to simulate this examination finding during testing, as well as how the this person would respond to an over stimulating environment or to a task that is too challenging. The SP is not provided a specific script but is given general information about their responses and is instructed to improvise as appropriate. Two of the actors are trained to be a parent of the patient in case 1. These actors are trained in the typical emotions a parent may feel in this situation and the questions/concerns a parent would typically have. A few days before the examination lab, the SPs meet with the instructors again to review any questions and practice the portrayal of the case.

Lab 1: Patient Examination with the SP

* Preparation: During the first 30 minutes, each faculty member leads 2 small groups who are working on the same clinical case in discussion about the case. This includes discussion of the critical thinking questions, confirming the plan for the examination session, and having each group get the space and equipment ready for the session. Each small group is given a dry erase board to use as a visual aid for planning.
* SP Examination: The SP arrives in character and the faculty member assists the patient into the most appropriate position to start the examination. For case 1 the patient’s parent (another actor) is also present. The group of 5 students is then responsible for completing the patient examination. The faculty member can provide guidance when beneficial, or call a “time out” during which the clinical scenario is paused. This can be helpful for the faculty member to ask questions to stimulate clinical reasoning, correct mistakes, provide feedback, or have the students practice a skill again. The students have 60 minutes to complete the examination.
* Post Examination Discussion: After the examination, the SP (and family member) leaves while still in character. For the remaining 30 minutes the faculty member leads discussion about the experience with the 2 groups assigned to the same case. Students are asked to reflect on the experience and their clinical decisions. Additional questions include: “What are the impairments/activity limitations and participation restrictions in this case?”; “Based on your knowledge of TBI and prognostic indicators, what is the PT prognosis for this patient?”; “What interventions will be included in the plan of care?”; “What is your clinical judgment about how these limitations relate to one another, and the pathophysiology of TBI?”

Lab 2: Examination Presentation

Two rooms are used for the examination presentations with half the class in each room. One group that was assigned each patient case is in each room. In each room there are 3 30-minute presentations, followed by 30 minutes of open discussion time. During each 30 minute presentation, the 5 students are responsible for presenting the examination, evaluation, diagnosis, prognosis, and plan of care to the rest of the class using a visual aid (usually PowerPoint). A handout is also generated that is distributed to the class. The SP is present for the students to demonstrate examination techniques. The goal of this session is for all students to experience all the cases. In addition, the presenting group is required to synthesize the information in a more organized manner through creating the presentation.

Time for student to complete the activity: 1. Preparation for examination lab (outside of lab time): 1-2 hours is estimated prior to the lab session. 2. Examination lab: 2 hours 3. Preparation for presentation lab (outside of lab time): 1-2 hours with group members to prepare the presentation. 4. Presentation lab: 2 hours (30 minutes presenting)

Readings/other preparatory materials: Fulk GD, Nirider CD. Traumatic Brain Injury. In O’Sullivan SB, Schmidt TJ, Fulk GD. Physical Rehabilitation*.* 6th ed. Philadephia, PA: F.A. Davis Company; 2014:859-872.

Learning Objectives: 1. Select relevant and appropriate history questions, systems review, and tests and measures to include in the patient examination for an individual with TBI. 2. Implement examination procedures accurately and efficiently, while considering the patient’s presentation, practice setting environment, and time constraints. 3. Synthesize examination findings to determine the patient’s impairments, activity limitations and participation restrictions. 4. Describe how the patient’s level of cognitive functioning will impact the physical therapy plan of care. 5. Establish physical therapy goals that are realistic and functionally based. 6. Demonstrate professional behavior and effective communication strategies with the patient and family (when present). 7. Present findings of the case to the class using appropriate communication strategies (volume, rate of speech) to enhance the ability for the entire class to understand PT management at the patient's level of cognitive functioning.

Methods of evaluation of student learning: The grade for this assignment is comprised of 2 parts: 1) an individual clinical performance grade (10 points) graded during the patient examination, and a group presentation grade (50 points), graded during the presentation only.

Clinical Performance Grade:

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| --- | --- | --- |
|  | Comments | Possible Points |
| * Demonstrates safe practice |  | \_\_\_/4 |
| * Demonstrates appropriate verbal and nonverbal communication   + Includes the patient’s perspective in the examination   + Provides education as appropriate that is consistent with the patient’s background, culture, and current level of cognition |  | \_\_\_/4 |
| * Develops a positive working relationship with their peers and the facilitator during the lab session |  | \_\_/2 |
| * Demonstrates professional behavior (timeliness, appropriate dress, accountability, preparedness, appropriate participation in discussion) |  | \_\_\_/2 |
| Total individual grade for clinical performance |  | \_\_\_/12 |

Examination Presentation Grade:

|  |  |  |
| --- | --- | --- |
|  | Comments | Possible Points |
| History:   * Contextual factors (personal and environmental) *(2 points)* * Current and past medical history *(2 points)* |  | \_\_\_/4 |
| Systems Review and Tests and Measures: Identify the examination procedures you performed with at least one from each of the following categories. Include standardized outcome measures when appropriate. *(5 points each)*   * Sensory examination * Motor examination (ex-muscle strength, muscle tone, selective control, nonequilibrium coordination) * Functional activities |  | \_\_\_\_/15 |
| Level of Cognitive Functioning:   * Identify the patient’s level of cognitive functioning, how you determined this level, and how this level impacted your examination. |  | \_\_\_/6 |
| Evaluation:   * Use the ICF model to present the patient’s body function/structure impairments, activity limitations and participation restrictions in this case. |  | \_\_\_\_/6 |
| Physical Therapy Diagnosis |  | \_\_\_\_/2 |
| Prognosis: Include the factors you considered to develop this prognosis |  | \_\_\_\_/2 |
| Physical Therapy Recommendations (days/week, min/session, ELOS) |  | \_\_\_\_/3 |
| 3 Short Term Goals: *(2 points each)* |  | \_\_\_\_/6 |
| 3 Long Term Goals: (*2 points each)* |  | \_\_\_\_/6 |
| Total Score | | \_\_\_/50 |

**Appendix A Simulated Patient Cases**

Case 1:

You are a PT in an acute care hospital where you will evaluate a new patient today, named John. John is a 20 year old male who was involved in a high speed motorcycle accident 4 days ago that resulted in a severe traumatic brain injury. You read in the chart that his Glasgow Coma Scale score at the scene was 3 and he was intubated upon arrival of the emergency responders. His initial oxygen saturation upon admission to the hospital was 86%, his blood pressure was 90/40 and heart rate was 180. Neuroimaging revealed focal injury of the right frontal/parietal lobes. His orthopedic injuries include left rib fractures 7-11 and a right clavicle fracture. The patient is currently using oxygen through his tracheotomy site and had an NG tube was placed to meet his nutritional needs. He is non-weight bearing on the right upper extremity at this time due to the clavicle fracture and is not able to raise his arm above 90 degrees of flexion/abduction. John has a large skin abrasion on his right lower leg that was a result of the accident. It is documented in the chart that John is a college student who was home on a school break when the accident occurred and that he is currently living with his parents. His parents live in a 2 story home with 3 steps to enter and 12 stairs to John’s bedroom and the full bathroom. Medical and nursing notes indicate that John is starting to open his eyes for longer periods of time, and that he inconsistently demonstrates generalized responses (groaning and minimal movements of his extremities) to stimuli in his environment. He is dependent for all aspects of mobility and has not yet been out of bed. John’s parents have been very involved in his care and have been taking shifts at the hospital so one of them is always with him. Either John’s mother or father will be present for your examination.

Case 2:

You are a PT working at an inpatient rehabilitation facility. This afternoon you will evaluate John, a new patient who is being admitted from the acute care hospital. John is a 20 year old who was involved in a high speed motorcycle accident 4 weeks ago resulting in a severe traumatic brain injury. During your chart review you read that John’s Glasgow Coma Scale score at the scene was 3. He was intubated and ventilated immediately. He is now using a tracheostomy to maintain oxygen saturation on room air. Neuroimaging revealed focal injury of the right frontal/parietal lobes. His orthopedic injuries include left rib fractures 7-11 and a right clavicle fracture. John had a G-tube placed 5 days ago and now receives all nutrition through the G-tube. He is non-weight bearing on the right upper extremity at this time due to the clavicle fracture and is not able to raise his arm above 90 degrees of flexion/abduction. John has a large skin abrasion on his right lower leg that was a result of the accident. It is documented in the chart that John is a college student who was home on a school break when the accident occurs, and that he is currently living with his parents. His parents live in a 2 story home with 3 steps to enter and 12 stairs to John’s bedroom and the full bathroom. Over the past 4 weeks John was receiving care in the intensive care unit and step down unit. John is now awake and alert for longer periods during the day. He is verbalizing and able to produce intelligible speech. Nursing and therapy notes indicate that John demonstrates agitated and confused behavior. He is not oriented to self, place, or situation. The physical therapist documented that yesterday he required moderate assistance for bed mobility and transfers and moderate-maximal amount of assistance for standing. He is moving all 4 extremities, but has much greater active movement of his right extremities with increased tone in the left upper and lower extremities. He was not able to safely ambulate.

Case 3:

You are working at an outpatient comprehensive rehabilitation center. Today you will evaluate John, a new patient. John is a 20 year old with traumatic brain injury related to a high speed motorcycle accident ~12 weeks ago. Prior to the accident John was attending college 4 hours away to pursue a major in business with a concentration in marketing. John was discharged from the rehabilitation center this week and is now living at home with his parents. John’s mother modified her work responsibilities to be home with him so she can provide him supervision, assistance, and transportation to appointments. They live in a 2 story home with the bedroom and full bathroom on the second floor. There is a half bath accessible on the first floor. In your chart review you read that his Glasgow Coma Scale score at the scene was 3. He required intubation, ventilation at first then had a tracheotomy placed. Neuroimaging revealed focal injury of the right frontal/parietal lobes. His orthopedic injuries include left rib fractures 7-11 and a right clavicle fracture. The physician cleared him for weight bearing as tolerated on his right upper extremity and does not have any ROM restrictions. John received care at the acute care hospital for 4 weeks, then inpatient rehabilitation for a total of 6 weeks. Discharge notes from the rehabilitation unit indicate that he is oriented to self, place, and intermittently oriented to situation. John requires cues and supervision for safety during all tasks, as he does not recognize his current limitations and the implications for his function. The PT noted decreased generalized strength throughout John’s trunk, right upper extremity and right lower extremity. He demonstrates limited active movement of his left extremities with more activation proximally and limited distal activation. His ability to perform isolated joint movements of his left upper and lower extremity is limited. John is able to ambulate 150 feet with minimal assistance for balance and moderate cues for safety. He uses an ankle foot orthosis on the left side to improve safety while standing and ambulation. John scored 30/56 on the Berg Balance Scale. The patient is also starting interdisciplinary rehab this week for occupational therapy and speech language pathology and will consult with the social worker and neuropsychologist.

Answer the following questions prior to the standardized patient examination session:

1. Based on the information provided in the case, what level is this patient on the Rancho Los Amigos Levels of Cognitive Functioning? What will you look for to know that the patient is starting to progress to the next level?
2. How will you structure your interaction with the patient based on the level you determined?
3. What are considerations based on the practice setting? (i.e. time allotted for PT examination, team members present, equipment available)
4. Examination:
   1. What additional information will you seek during your chart review, interaction with the patient and family, and from the other members of the medical team?
   2. What tests and measures will you select?
   3. How does the patient’s cognitive status impact the delivery of the examination procedures?