**Title and Focus of Activity**: Intervention Assignment

*Linking Foundational and Clinical sciences; Intervention*

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Washington University Program in Physical Therapy-St. Louis, MO

**Course Information:**

Diagnosis and Management of Neuromuscular Conditions II; 4 credit hours; Year 2 in the Spring, after courses in Neuroscience (neuroanatomy), Neurology Medicine (medical management of neuromuscular conditions) and Diagnosis and Management of Neuromuscular Conditions I (neurologic examination).

**Learning Activity Description:**

Context/Purpose: Physical therapists are often confronted with unproven rehabilitation interventions via colleagues and continuing education courses. They need to consider whether or not a particular intervention is worth trying with a particular patient, and need to consider what the intervention claims to do and how this fits with knowledge of the nervous system and how movement is controlled. The purpose of this assignment is for the student to use the literature to examine the theoretical claims for the efficacy of an intervention and determine if it “fits” with what is known about neural control of movement and motor learning.

**Intervention Assignment**

Over the course of your career as a physical therapist, you will be confronted with new or old, but often unproven rehabilitation interventions via colleagues and continuing education courses. You will need to consider whether or not a particular intervention is worth trying with a particular patient. In the absence of data on efficacy, you will need to consider what the intervention claims to do and how this fits with your knowledge of how the nervous system works and how movement is controlled. This written assignment will require you to examine the theoretical claims for the efficacy of an intervention and determine if it “fits” with what is known about neural control of movement and motor learning.

Specific instructions

You will be assigned one of the five topics noted below.

1. Constraint Induced Movement Therapy (CIMT)
2. Neurodevelopmental Treatment (NDT)
3. Lokomat/Auto-ambulator training/Body-weight supported treadmill training (BWSTT)
4. Virtual Reality Training
5. Big and Loud training (LSVT BIG)

Written Assignment: This portion of the assignment is to be completed individually. In two double-spaced, typed pages (12 pt font, 1 inch margins), provide answers to the following questions.

1. What is the intervention and who is it for?
2. What are the proposed neural mechanisms that underlie how the intervention works or is claimed to work?
3. How does the intervention and its proposed neural mechanisms fit with what we know about motor learning principles and how movement is learned or controlled?
4. What are the clinical implications and clinical merit of the intervention?

Please write out each question and then provide your answer in a few concise sentences. It is your responsibility to appropriately reference any material you use. Answers should be supported by a minimum of at least five references from publications (not websites or classroom lectures). Answers to each question should be succinct and thorough. The complete written assignment should are due 6 weeks before the end of the semester. Late assignments will be penalized 5 percentage points per day.

Group Oral Presentation: Individual students assigned to each of the 5 topics will combine to form groups that will orally present on each topic. This 15-20 minute presentation should be viewed as an opportunity to: share what you have learned with the rest of the class, finesse your own answers, and gather information from others. Groups should meet to synthesize their findings and present answers via a powerpoint presentation. All students are expected to attend this class session, be prepared to answer questions following their presentation, and to provide written feedback to other groups.

Time for student to complete the activity: Preparation for activity outside of/before class: Approximately 2-3 hours; Class time completion of the activity: Approximately 1-2 hours

Readings/other preparatory materials: There are no assigned readings.

Learning Objectives:

1. Synthesize the literature about a particular intervention to determine the populations for whom the intervention would be effective
2. Describe the proposed neural mechanisms and/or motor learning principles that purportedly underlie the intervention and how they align with current motor control/learning principles
3. Discuss the clinical implications and merit of the intervention (time, training, cost, equipment, etc)

Methods of evaluation of student learning:

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Intervention Topic (indicate/check below)

1. Constraint Induced Movement Therapy (CIMT) \_\_\_\_\_
2. Neurodevelopmental Treatment (NDT) \_\_\_\_\_
3. Lokomat/Auto-ambulator/Body-weight supported treadmill training (BWSTT) \_\_\_\_\_
4. Big and Loud training \_\_\_\_\_
5. Virtual Reality training

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| **Criteria** | **# of points** |
| Describe the intervention and the populations in which it has been found to be clinically effective | /4 |
| What are the proposed neural mechanisms that underlie **how** the intervention works or is claimed to work? Discuss portions of the CNS that are proposed to be affected by the intervention. | /6 |
| **How** does the intervention relate to specific motor learning principles and what we know about how movement is learned or controlled?  -Discuss information related to neuroplasticity (task specificity, dose, etc.  -Discuss other factors that affect motor learning (eg. feedback and practice conditions) | /6 |
| What are the clinical implications and clinical merit of the intervention?  -types of patients, strength of evidence, frequency/dose, cost, training, equipment, therapist time, precautions or contra-indications | /6 |
| Appropriate spelling, grammar, font/spacing, style, reference format | /4 |
| Participates in group oral presentation and provides written feedback for other presenters | /2 |
|  | Total= /28 |