





Assessment of NMD & Revisit LAB

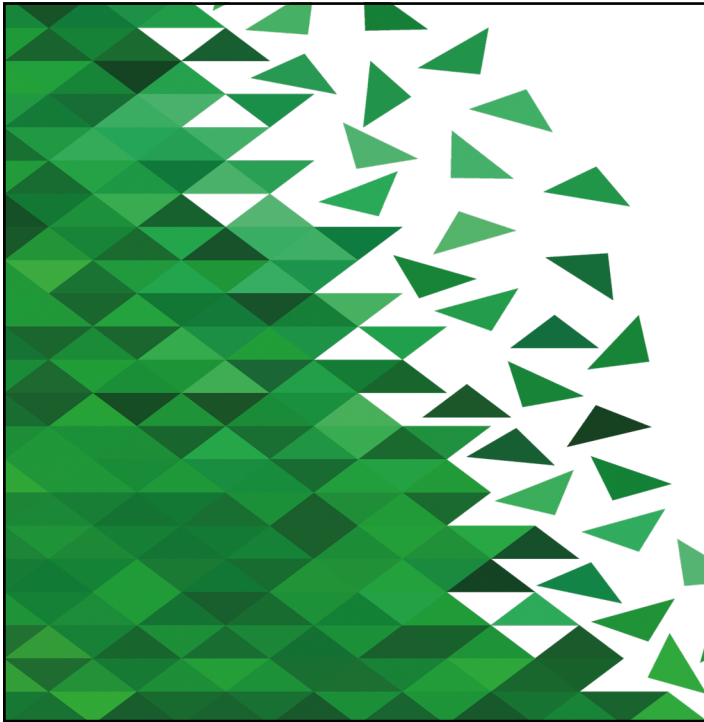

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Learning Outcomes

- 3. Demonstrate **biomedical knowledge** of common neuromuscular disorders.
- 4. **Critique assessment techniques** and rehabilitation strategies for common neuromuscular disorders.
- 5. **Select and apply** appropriate **assessment techniques and rehabilitation strategies** for common neuromuscular disorders in an interprofessional environment.

Task #2- Objective Assessment



Assessment- Most Confident

Standing Balance	3.5
Light Touch	4
Touch Localisation	4
2 point Discrimination	3.6
Proprioception	3.8
Stereognosis	3.6
NMC- Global & Components	3.8
Visual Field	3.9
Smooth Pursuit	4
Saccades	3.9
Strength	3.6



Assessment- Less Confident

Upper Limb Manipulation	2.9
Upper Limb- Precision, Power, Tip to tip	3
Aerobic	2.7
Measures	
TUAG	2.9
MDS-UPDRS (Rigidity)	2.1
Chedoke	2.7
BESTest	2.5
HiMAT	2.3





Treatment- Most Confident

Saccades	3.6
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Treatment- Less Confident

FES	2.1
Upper Limb Manipulation	2.8
Upper Limb- Precision, Power, Tip to tip	2.8
Aerobic	2.9



Stations: Based on “Less Confident”



Task #1: Subjective Assessment

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Task #2: Objective Assessment- Practical Skills

In the lecture, the group indicated what assessment and treatment skills they felt confident with, and those that could do with some... .."refreshing". This lab provides the opportunity to do this.

In groups of THREE, you will identify a role each:

- **Therapist, Model OR Observer**

There are **SIX stations**. The Observer will ask the Therapist some provided questions and/ or perform an assessment or treatment skill. The Observer and model will indicate and provide feedback on the performance of these (feedback of performance or results...). You will rotate roles as you move around the stations- ideally each student will be a **Therapist for ONE upper limb scenario** (Station 1-3 based on POMF II), **AND ONE lower limb scenario** (Station 4- 6 based on POMF I).

Refer to your [Neuro Toolbox©](#) (pdf and videos) as required (*Blackboard > Physio Hub > Neuro Toolbox*).

Task #3: Case Scenario- Sarah (based on SDL Biomedical Knowledge Summary)

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Station 1: Upper Limb

POMF II: A 35-year-old woman with MS is experiencing difficulty reaching to grasp a cup of tea, and is concerned about her vision.

- **Q: Normal components of motor control in the upper limb?**
- **A:** *Locate the object, balance, Transport, preshaping, grasp, manipulation, release*

- **Q: Abnormal or missing strategies might observe?**
- **A:** *Multiple- continue once give three*

- **Q: What might be some impairments that contribute to the abnormal or missing strategies?**
- **A:** *Multiple- continue once give three*

- **PERFORM- Assessment**
- **ARAT- Grasp** section
- **Q:** *What would you likely observe with this patient that would indicate they are having difficulty with this task?*

- **PERFORM- Assessment**
- *UL- Manipulation*

- **PERFORM- Treatment**
- *UL- Manipulation*

- **PERFORM- Treatment**
- *Strength- Elbow flexors- from a grade 2 to 3, then 4/5 (i.e. consider positioning and handling)*
- **Q:** *What are some principles you might apply to prescribing an exercise programme (i.e. should include parameters for F I T T and I R I S*



Station 2: Upper Limb

POMF II: A 45-year-old man who had a (L) hemisphere stroke 4 months ago is having difficulty handling money and bank cards.

- **Q: Abnormal or missing strategies might observe?**
- **A:** *Multiple- continue once give three*

- **Q: What might be some impairments that contribute to the abnormal or missing strategies?**
- **A:** *Multiple- continue once give three*

- **Q: Define the different types of manipulation and give examples of each?**
- **A:** *Translation (palm to finger tips), shift (moving pen along from end to tip), rotation*

- **PERFORM- Assessment**
- **Chedoke ARM Test-** *demonstrate*
- **Q:** *What would you likely observe with this patient that would indicate they are having difficulty with this task?*

- **PERFORM- Assessment**
- **MDS- UPDRS (Rigidity)-** *wrist OR elbow flexion/ extension*

- **PERFORM- Treatment**
- **Neuromuscular Control-** *wrist extensors with a grade 2 then 4/5 muscle strength (i.e. consider positioning and handling)*

- **PERFORM- Treatment**
- **Q: Motor Imagery-** *what is it? (something like “mental imagery without movement, practicing using similar neural networks”)*
- **Demonstrate it, training with an appropriate task (task related training)**



Station 3: Upper Limb

POMF II: An 18-year-old man had a head injury affecting his cerebellum two weeks ago. He reports having difficulty keeping objects steady, particularly when bringing food to his mouth.

- **Q: Abnormal or missing strategies might observe?**
- **A:** *Multiple- continue once give three*

- **Q: What might be some impairments that contribute to the abnormal or missing strategies?**
- **A:** *Multiple- continue once give three*

- **Q: How is the cerebellum involved in normal motor control?**
- **A:** *Cerebellum is normally responsible for coordination of smooth movement though it 'comparator' role. (takes sensory feedback and adjusts motor output based on blueprint of motor plan)*

- **PERFORM- Assessment**
- **ARAT-** *demonstrate Pinch component*
- **Q:** *What would you likely observe with this patient that would indicate they are having difficulty with this task?*

- **PERFORM- Assessment**
- **Sensory Testing-** *Two-point Discrimination of the thumb and index finger*
- **Q:** *Where is this information processed*
- **A:** *Primary sensory/ somatosensory cortex*

- **PERFORM- Treatment**
- **Sensory Testing-** *Stereognosis*
- **Q:** *Where is this information processed*
- **A:** *Associative somatosensory cortex*

- **PERFORM- Treatment**
- **Neuromuscular Control-** *timing*
- **Progress using task related training**
- **Q:** *What practice structure is better for motor learning (i.e. constant vs. variable; block vs. random)? Is this a serial or continuous task?*



Station 4: Lower Limb

POMF I: Your patient is 75 and has been on bed rest for six weeks. He is complaining of feeling very unsteady and has fallen twice in the last month. He wants to be able to make himself a cup of tea in his kitchen.

- **Q: Abnormal or missing strategies might observe?**
- **A:** *Multiple- continue once give three*

- **Q: What might be some impairments that contribute to the abnormal or missing strategies?**
- **A:** *Multiple- continue once give three*

- **Q:** (a) What do you understand by the term LOS? (b) What happens when you reach your LOS? *Recover using strategy, change BOS (step) or fall over*
- **A:** (a) *COM outside BOS. (b) Recover using strategy, change BOS (step) or fall over*

- **PERFORM- Assessment**
- *Demonstrate how you would assess the **motor** balance strategies in standing (NOTE: Pick two or three for them to demonstrate to you- Motor- ankle, hip, stepping [may be also suspensory] strategies- anticipatory then reactive*
- **Q:** If your patient has difficulty with using vision, what might you see?

- **PERFORM- Assessment**
- **Q:** what would be THE MOST APPROPRIATE balance [standardised] outcome measure for this patient and why?
- **A:** *BESTest; then may be Berg. Includes motor and sensory strategies in standing as well as some BEST functional tasks while walking which will be required as he gets his cup of tea.*
- *Demonstrate the **TUAG**.*
- *Demonstrate the TUAG with Dual Tasking (refer to rehabmeasures.org)*

- **PERFORM- Treatment**
- *Strength of dorsiflexors- from Grade 2 to grade 3, then grade 4 (note positioning, handling, appropriate muscles, range, different types of contraction- isometric, concentric, eccentric)*
- **Q:** (if not already demonstrated) Show me how to strengthen using a closed kinetic chain

- **PERFORM- Treatment**
- *Demonstrate how you would incorporate task related training, with 1 progression (may be something like TUAG with dual tasking- or increasing complexity by task, reducing facilitation or feedback, increasing complexity in environment or amount of resistance/ intensity (TuFFER)*



Station 5: Lower Limb

POMF I: Your patient is a 45-year-old woman who had a stroke affecting her right side, 4 months ago and has been very unsteady since. You know that she has lost some strength and sensation in her arm and leg. She wants to be able to get her mail from the letter box which is down two steps, 10 metres away.

- **Q: Abnormal or missing strategies might observe?**
- **A:** *Multiple- continue once give three*

- **Q: What might be some impairments that contribute to the abnormal or missing strategies?**
- **A:** *Multiple- continue once give three*

- **Q: What types of sensations are important for balance?**
- **A:** *Vestibular, visual, somatosensory systems (2pt/ proprioception)*

- **PERFORM- Assessment**
- Demonstrate how you would assess the **sensory** balance strategies in standing (vestibular, vision and proprioception)

- **PERFORM- Assessment**
- **BESTest** (*Brief OR Mini*)

- **PERFORM- Treatment**
- *Strength of hip extensors- from Grade 2 then grade 4 (note positioning, handling, appropriate muscles, range, different types of contraction- isometric, concentric, eccentric)*

- **PERFORM- Treatment**
- *Demonstrate random practice related to this person's goals/ task*



Station 6: Lower Limb

POMF I: Your patient is an elderly man who has noticed difficulty getting up from sitting especially when in a low chair, which has increased since he had a non-injurious fall 2 weeks ago. He wants to be able to get up quickly to answer the door or phone.

- **Q: Abnormal or missing strategies might observe?**
- **A:** *Multiple- continue once give three*

- **Q: What might be some impairments that contribute to the abnormal or missing strategies?**
- **A:** *Multiple- continue once give three*

- **Q: What are the normal components of sit-stand?**
- **A:** *weight shift- feet behind knees, lean forward, momentum transfer-bottom up, forward shift of knees, Lift, stabilisation*

- **PERFORM- Assessment**
- *Demonstrate the most appropriate standardised outcome measure for this person (may be 30SCST, TUAG)*
- *Q: demonstrate a progression of this (consider TuFFER)- harder, then easier*

It is now 5 weeks since his fall and he has improved steadily over time. When you re-evaluate his goals, he is keen to get back to his Harriers (running) group.

- **Q: What now would be the best outcome measure? (HiMAT), and Why? (includes element of running and plyometric items)**
- **HiMAT-** *Demonstrate 2-3 items- hop, skip or bound. Discuss how is scored*

- **PERFORM- Treatment**
- *Patient has Grade 2 hamstrings. Retrain sit-to-stand with facilitation (Tap, attentional cueing, weight bearing, motor imagery, bilateral activation, mirror/visual, voice, active/assisted, support/assistance)*

- **PERFORM- Treatment**
- *Demonstrate 2 progressions (Lower bed, smaller BOS, no hands, slow, faster, holding object, more reps. Nothing weird- ask about how the task selected relates to real life)*