**Title and Focus of Activity:**  Lifespan Balance and Vestibular Lab *Patient/Client Management*

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**Course Information:** Neuromuscular Intervention I; 4 credits; first semester of second year, first of two required courses. A concurrent course on outcome assessment provides exposure to many standardized tools.

**Learning Experience Description:** Context: This lab is part of the first neuromuscular course; prior to the lab, didactic information is presented on balance (3 h.), coordination (3 h.), vestibular dysfunction (6 h.), stroke (12 h.), TBI (12 h.).

In groups of 3 or 4, students work through the items on the balance lab, moving to stations throughout the lab and nearby hallways where standardized measure set ups are marked for Community Balance and Mobility Scale (CBMS), High-level Mobility Assessment Test (HiMAT), Dynamic Gait Index (DGI)/Functional Gait Assessment (FGA), Timed Up & Go (TUG) variations, Walking While Talking Test, etc. The stations provide opportunities to administer and compare standardized outcome measures useful for gait/balance, and use a variety of equipment to challenging balance.

Faculty and teaching assistants are available to assist and pose additional questions during the lab. Typically there is need for students to have guidance on the Peabody scoring in order to arrive at the correct scores. The lab write up (Appendix A) is submitted from the group, so that grading/feedback goes is the same for each person in the group

Equipment required/beneficial**:** Swiss balls, Sit Fit, Step Fit, BAPS board, BOSU, foam pads, Rick case, ½ rolls, HiMAT, CBMS and Peabody Developmental Motor Scale manuals, tape measures (for HiMAT bounding task), cup for TUG manual, DGI test items (obstacles to step over, small cones), stairs in proximity to lab space.

Copies of the HIMAT and CBMS test manuals as well as Peabody scoring manual are available during the lab session. Students can access the Rick case online as well as the BESTest manual, introduced in postural control/balance class lecture.

Time for student to complete the activity: 1. preparation for activity outside of/before class: -- 2. class time completion of the activity: 3 hours which includes lab write-up

Readings/other preparatory materials: Peabody Developmental Motor Scale manual is needed for scoring of the Ryan question.

Learning Objectives: [these represent a subset of objectives from multiple classes on Balance, Coordination and Vestibular content] 1. Compare and contrast automatic postural responses (APR) and anticipatory postural adjustments (APA). 2. Describe important considerations in the selection of balance assessments. 3. Demonstrate appropriate methods of testing for balance dysfunction. 4. Outline an intervention plan to address balance problems identified in an assessment. 5. Demonstrate appropriate clinical tests for assessment of clients with cerebellar dysfunction. 6. Given a description of a client with cerebellar involvement, identify motor impairments that may be contributing to the client’s functional limitations, and design an appropriate intervention plan. 7. Differentiate vestibular and non-vestibular causes of dizziness. 8. Identify patterns of vestibular dysfunction(s) commonly seen in PT practice based on symptom complaints and tempo, and examination results, including: unilateral vestibular hypofunction, BPPV (posterior canal primarily), bilateral vestibular hypofunction, central vestibular disorder. 9. Demonstrate basic examination/evaluation skills including vestibular ocular reflex (VOR) testing, head thrust testing, positional testing, self-report and postural control measures. 10. Demonstrate intervention approaches including: VOR exercises, modified Epley maneuver, Brandt-Daroff exercises. 11. Describe basic principles of vestibular rehabilitation progression based on findings in exam.

Methods of evaluation of student learning: Laboratory write-ups are graded by faculty, with feedback about the quality of responses and rationale for choices made.

Each question on the lab is worth 6 points with the exception of question 3a, worth 4 points, totaling to 100 points. Correct answers for question 5a (Ryan case) are shown in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PDMS-2 subtest** | **Raw Score** | **Age Equivalent** | **Percentile** | **Standard Score** |
| **Stationary** | 44 | 38 months | 9 | 6 |
| **Locomotion** | 99 | 22 months | 1 | 3 |
| **Object Manipulation** | 43 | 56 months | 50 | 10 |
| Sum of Standard Scores is 19, which corresponds to a Gross Motor Quotient (GMQ) of 76, and represents the 5th percentile for children Ryan’s age (54 months). |

Grading is based on our H (93-100%),P (80-93%),L (70-80%), F (<70%)scoring system, with an H response to a question receiving no deductions. P deductions of ½ to1 point are made, and an L response is indicated by 1½ point deduction, with 2 or more points deducted for an F level response on a 6 point question. If a group doesn’t respond to part of the question asked, deductions are made for those responses at a higher level (e.g. only provides 2 activities, when 3 were asked for, maximal score would be 4/6 on that question).

H responses include the following elements:

* All parts of the question are answered clearly
* If asked to make a choice about outcome measure or activities, the choice is clearly articulated and well justified
* If there is a “correct” response (e.g. 3c, 5a, responses in 7), then the correct response is provided.
* Therapy activities chosen relate to patient interests, stated goals, and are appropriate in challenge, so patient would likely be engaged by the challenge
* If progression is described, it is reasonable given the patient scenario
* As appropriate safety is considered in the selection of HEP or therapy activities
* Responses show integration of lecture, readings and insights gained by laboratory practice

P responses include most but not all of the criteria above.

L responses include some but not most of the criteria above.

F responses for a question include some clear lack of understanding of important concepts, suggest activities that would be unsafe or inappropriate for the scenario described.

Appendix A Lab write up (one per group)

Intervention for Balance and Coordination Dysfunction

Names of students in group:

*Each scenario provides you with some questions for thought as you work on the lab activities. In addition,* ***answer the question(s) in bold*** *in writing as a group for this lab write-up.*

1. You are working with an adolescent patient who sustained a brain injury two weeks ago. She was in a coma for 3 days. Recovery is occurring rapidly – she’s on rehab but is already able to walk independently without an assistive device. You observe some difficulty with balance and coordination for faster movements required for sport and recreation (patient formerly rode horses, played racquetball, basketball and volleyball for recreation). She wants to get back to these activities as soon as possible. You’re concerned that, given her high level physically, she will be discharged very soon. Consider the High Level Mobility Assessment Test and Community Balance and Mobility Scale as possible outcome measures for your initial exam. (see pages at end of lab handout) **a) Which of these two measures do you think would be a better choice? Why? (6 points)**

Using the balance equipment we have in lab, devise some dynamic balance or coordination activities that will improve balance control. Practice a progression of activities. **b) List three of the activities that illustrate a progression in terms of challenge for your patient. (6 points)**

2. Dr. Davidson is a 72 y.o. retired physician who is 2 1/2 weeks s/p left MCA CVA. He has severe aphasia, but is able to follow simple instructions, especially when accompanied by gestures and other cues. Although Dr. Davidson is able to maintain his balance in quiet sitting, he has more difficulty with reaching activities, especially reaching across midline with his LUE. He shows some shortening of trunk musculature on the right, and a tendency to bear more weight on the left hip than the right in sitting. His RUE is classified at Brunnstrom stage 3.

Discuss a treatment progression for sitting balance activities for Dr. Davidson that would work on stability, and progress toward controlled mobility of the trunk. Consider use of the “SIT FIT” disc or the Swiss ball. How would you help him understand what you wanted him to do? **Describe one activity you would recommend to focus on stability, and one activity that requires controlled mobility in sitting. (6 points)**

3. You are working with an elderly patient, Rosalyn, in her home. Her home is a split-level, with 8 steps to ascend to the main living area (downstairs is a basement and garage, where she rarely goes). She has fallen several times recently, and you are concerned about potential for injury. As part of your evaluation, you perform the Berg Balance Scale. Her total score is 47. She scored a 4 on all of the items except for: 6, 8, 9, 11, 12 (scored a 3) and 13, 14 (scored a 2). You performed the CTSIB with her, and found that she was stable in condition 1, more unsteady in condition 2-4; and lost her balance in conditions 5 and 6. Upon musculoskeletal screening, you determine that she has reduced ankle dorsiflexion range bilaterally, and you discover bilateral symmetrical weakness (3+ to 4-/5) for the following muscle groups: ankle dorsiflexors and plantarflexors, hip extensors and abductors. **a) List the components of a treatment program for Rosalyn. (4 points)**

**b) What functional activities would you have the patient practice (with you there) to help improve her balance? (6 points)**

c) How do you interpret the findings from the CTSIB test? (6 points)

d) Describe how you could use the results of the test to provide challenges to your patient that would help her use sensory information differently for balance. (6 points)

4. Review the case information for Rick (see below). Experiment with the purple “STEP FIT” and one of the “SITFIT” discs as methods to work on standing balance. Do you think use of either of these would offer Rick the appropriate level of challenge? **What balance activities would you recommend for him to practice? (6 points)**

5. Ryan is a 4-year-old boy who is 2 weeks s/p TBI as a result of a bicycle accident. His GCS score when brought to the emergency room was 8, but rapidly improved to 12 during the next 24 hours and 15 by day 2. He had no other injuries except abrasions on his right forearm and knee.

Ryan is now alert and cooperative, but he complains that his head hurts, and his parents have noted decreased activity level compared to prior to the accident and some unsteadiness in gait. He has no memory of the day of the accident. He is able to follow instructions, and shows good carryover of new learning from one day to the next. He was discharged from the hospital ten days ago, and is now referred to you for OP follow-up.

You include the Peabody Developmental Motor Scales 2nd ed. (PDMS-2) in your examination. Ryan’s exact chronological age is 4 years, 6 months, and 4 days. His scores on the Stationary, Locomotion, and Object Manipulation subtests are described below. Copies of the Examiner Record Booklet and the Examiner’s Manual are provided.

Stationary subtest: Items #17 (raising to sit) - #30 (sit-ups) were scored. Ryan received a score of “2” on items #17 - 19, and 26. He received a score of “1” on items #20, 22, and 24 - 25. He received a score of “0” on items #21, 23, and 27- 29.

Locomotion subtest: Items #39 (creeping down stairs) - #62 (jumping down) were scored. Ryan received a score of “2” on items #39 - 41, 43, and 45. He received a score of “1” on items #42, 44, 46, 47, 50 - 55, and 57 - 59. He received a score of “0” on items #48 - 49, 56, and 60 - 62.

Object Manipulation subtest: Items #19 (throwing ball) - #24 (catching bounced ball) were scored. Ryan received a score of “2” on items #19 - 21. He received a score of “1” on item #22. He received a score of “0” on items #23- 24.

**a) Determine Ryan’s raw scores for the Stationary, Locomotion, and Object Manipulation subtests. Use Appendix C in the Examiner’s Manual to determine his age equivalents, and the normative tables in Appendix A to determine percentiles and standard scores. Graph Ryan’s standard scores in Section III of the Profile/Summary Form. Finally, use the table in Appendix B to calculate the GMQ for Ryan. Attach your scoring form to the write-up you turn in for your group. (6 points)**

**b) How would you interpret Ryan’s scores when talking with his parents? (6 points)**

**c) What specific exercises or activities would you suggest that they work on at home? (6 points)**

6. Coretta is a 33-year-old woman who is 1 week s/p surgical repair of an aneurysm affecting a branch of the right anterior cerebral artery. Bilateral UE m. strength is WNL. She has mild weakness of her left hip and knee musculature, with more significant impairment of left foot and ankle muscles. Although left ankle dorsiflexion is full range in a synergy pattern, isolated dorsiflexion is present through only about 25% of the range against gravity. Coretta is independent in basic ADL, and ambulates with contact guard assist using a straight cane. In the LLE, she shows decreased time in stance phase, increased hip and knee flexion at mid stance, and a “steppage” pattern during swing. When loss of balance occurs, protective stepping responses to the left are severely delayed to absent. Coretta’s balance seems to degrade when you are walking in busy environments. She sometimes stops when you start a conversation with her, excusing herself that her brain feels “fuzzy”.

Experiment with two dual-task measures:

**Walking While Talking Test** (Verghese)

Walking, fastest speed 20’, 180 turn, return 20’ \_\_\_\_\_\_\_\_\_\_

Walking, as above, while reciting the alphabet \_\_\_\_\_\_\_\_\_\_\_

Alphabet accurate?

Walking, as above, while reciting every other letter of the alphabet \_\_\_\_\_\_\_\_\_\_

Record letters:

Accurate?

**TUG, TUG manual and TUG cognitive** (Shumway-Cook)

Compare performance on TUG \_\_\_\_\_\_\_\_\_\_

Walking, for the TUG, while subtracting 3s number between 100 and 200 \_\_\_\_\_\_\_\_\_\_

Record numbers:

Accurate?

Walking, for the TUG, while carrying a cup of water \_\_\_\_\_\_\_\_\_\_\_\_\_

Without spilling?

**a) Which of these measures do you think would be appropriate to use with Coretta to examine her dual-task performance? Provide a rationale for the measure you choose. (6 points)**

**b) Describe one dynamic standing activity and one balance activity while walking that you would recommend for Coretta. Be specific in describing the activities. (6 points)** Practice these with a member of your group.

7. You have learned about automatic postural reactions (APRs) and anticipatory postural adjustments (APAs). Discuss how you can elicit information about APRs and APAs when you examine a patient. Practice administering the 2 in place and the 3 compensatory stepping items of the reactive postural response section (section 4) of the BESTest, introduced in the class on balance and postural control. Could these activities be used for therapy as well as examination?

a) List 3 methods for eliciting APRs in standing or during ambulation. (6 points)

b) List at least 4 characteristics of a perturbation that will affect the postural reaction. (6 points)

c) List 3 activities that would require your patient to use an APA to maintain stability in standing. (6 points)

8. You are evaluating a 63 year old patient, Sam, who has a two week duration complaint of “spinning” triggered by head or body turning (episodes of dizziness last 1-2 hours, but seem to be improving) and difficulties with balance during walking. He is referred to you by his ENT who documents a right unilateral weakness based on ENG testing. He reports having stumbled when walking outdoors in the dark and some unsteadiness in the shower when washing his hair. He enters your clinic demonstrating en bloc movement and demonstrates mild ROM limitations in cervical motions with c/o stiffness. Recent history is positive for a right ear infection three weeks ago. Upon evaluation, your patient has full range oculomotor control, conjugate eye movement, and no nystagmus. He exhibits a catch up saccade with head thrust to the right. Dix-Hallpike tests on both sides are negative for nystagmus. When attempting x1 VOR exercises, he complains of spinning when his head is moving and reports having some difficulty maintaining the visual stimulus in focus during head turns. You observe instability with coming to standing, walking with head turns, and turning around during walking.

Evaluate the Functional Gait Assessment (see information at the end of the lab handout). Which items do you expect Sam to have difficulty with? **a) Do you think this is a better choice as an outcome measure for Sam than the Dynamic Gait Index? Why or Why not?** **(6 points)**

**b) Describe treatment activities you would use to reduce instability and improve his symptoms. What are your expectations for improvement for this patient? (6 points)**

**FOR QUESTION #1**

**High Level Mobility Assessment Tool (SCORESHEET FOLLOWS)**

This test was developed by an Australian research group interested in creating a measure that would be useful for higher level mobility skills (beyond the FIM) post TBI – the initial exploratory studies examined tasks that were predictive of the ability to return to running after brain injury – these tasks are incorporated into the HIMAT.

The test has good interrater reliability and validity for independent ambulators (without assistive devices). MDC for the HiMAT is 1+ 2.66. Guidelines for scoring are based on adult level performance for higher level patients recovering from brain injury.

Williams G, Robertson V, Greenwood K, Goldie P, Morris ME. The High-level Mobility Assessment Tool (HiMAT) for traumatic brain injury. Part 1: Item Generation. *Brain Injury.* 2005;19(11):925-932.
More information is available from PubMed at this link, PMID: [16243748](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16243748&query_hl=6&itool=pubmed_docsum)

Williams G, Robertson V, Greenwood K, Goldie P, Morris ME. The High-level Mobility Assessment Tool (HiMAT) for traumatic brain injury. Part 2: Content Validity and Discriminability. *Brain Injury.* 2005;19 (10):833-843.
More information is available from PubMed at this link, PMID: [16175843](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16175843&query_hl=6&itool=pubmed_docsum)

Williams G, Greenwood K, Robertson V, Goldie P, Morris ME. High-level Mobility Assessment Tool (HiMAT): Inter-rater Reliability, Retest Reliability and Internal Consistency. *Phys Ther*. 2006; 86(3):395-400.
More information is available from PubMed at this link, PMID: [16506875](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16506875&query_hl=6&itool=pubmed_docsum)

Williams G, Greenwood K, Robertson V, Goldie P, Morris ME. The concurrent validity and responsiveness of the High-level Mobility Assessment Tool (HiMAT) for measuring the mobility limitations of people with traumatic brain injury. *Arch Phys Med Rehabil. 2006*;87(3):437-442.
More information is available from PubMed at this link, PMID: [16500181](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16500181&query_hl=3&itool=pubmed_docsum)

Scoresheets available at COMBI website **http://www.tbims.org/combi/list.html**

**Practice and score three of the HIMAT activities:**

1. Hop forward – time to complete hopping- Hop forward a distance of 10m on the more affected leg at fastest safe speed.

2. Bound – on one leg – measure three trials (cm) and figure and average

Jump forward off one leg and land on the other leg, attemping a no contact period between push-off and landing. The distance of the bound is measured from the push-off toe, which is positioned behind a line, to the landing heel. Perform three trials on each leg. All three trials are recorded and a mean distance is used to score. Each trial must have a no contact phase.

*Review the scoring for stairs to make sure you understand how those are scored for up and down….Below from the test manual:*

3. Stairs are tested with the fastest safe speed on a flight of 14 stairs. Timing is intended to be done without the knowledge of the client so that they don’t go too fast on stairs (potentially unsafe). Encourage walking up or down the stairs as best they can, going without a rail and reciprocally if possible. They are not to run or skip any steps.

For each stair item, clients are grouped according to how they attempted the stairs. If a client uses the handrail or can’t go reciprocally, they are scored as dependent. Their time is recorded and they are scored only on the “up stairs- dependent” item. If they can go reciprocally without a handrail, they are scored on the “up stairs – independent” item and they get an additional 5 points on the “up stairs – dependent” item. The same scoring procedure is used for down stairs.

**COMMUNITY BALANCE AND MOBILITY SCALE (SCORESHEET FOLLOWS)**

This tool was developed at Toronto Rehab Institute with a pediatric to adolescent population. The measure has good psychometric properties, although has not been as extensively studied as the HiMAT.

Howe J, Inness E, Venturini A, Williams JI, Verrier MC. The Community Balance and Mobility Scale: a balance measure for individuals with traumatic brain injury. *Clinical Rehabilitation*. 2006;20:885-95.

**Manual available at www.torontorehab.com/research/teammobility.htm**

**Practice and score four CBMS test items:**

4. Lateral foot scooting

6. Crouch and walk

7. Lateral dodging

8. Walking and looking

**FOR QUESTION #4**

“RICK”

# EXAMINATION

## **History**

Rick is a 30 year old man who sustained a TBI as a result of being hit by a car when he was walking on the shoulder of the highway at 2 am. He was taken to the local acute hospital where he was treated for 2 months. He was treated in acute rehab for 4 months, and referred to you in a residential rehabilitation setting at 6 months post injury.

*Social History/Occupation/Employment*

*Functional Status and Activity Level*

Rick is a HS graduate with a C average. He enrolled for 6 months at a community college after school, but withdrew because of poor grades and lack of interest in the coursework. He has had an inconsistent work history, primarily in sales. He has tended to change jobs after a year or so. Most recently he worked as a salesman in an electronics store. He was divorced from his wife two years ago, and was living with his girlfriend and her two children when the accident happened. He reports this relationship ended while he was in the hospital. Rick’s goals are to be independent with walking, to return to work and driving. Vocational evaluation rates him at the lowest of 4 levels for return to work.

## Living Environment

Rick plans to return home with his parents upon discharge They live in a two story home with the main living area accessible from the front door (up 7 steps with sturdy railing). The house is carpeted in a heavy shag. The bathroom Rick will use is large, but the door is too narrow for a w/c to go through. Rick’s father will be the primary caregiver (for physical tasks), but he works full-time.

## History of Current Condition/Past Medical History

Acute setting: Demonstrated a L subdural hematoma with L to R shift, craniotomy for hematoma evacuation on day of admission. Three days following CT showed acute infarctions in L frontal, L temporal and L occipital areas. R tib/fib fracture was managed with ORIF. He developed a L heel decubitus and was unable to be serial casted to prevent ankle contracture. ICP was increased for first three weeks after injury, managed with Pavulon. Ventilator support required for 3 weeks, tracheostomy after weaning. Gastrostomy placed six weeks post injury.

Rehabilitation setting: Follow-up CT performed at 3 ½ months post injury when mental status changes were noted. Observed increased ventricle size, L frontal and temporal lobe encephalomalacia, cerebellar atrophic changes, mild bifrontal cortical atrophy (? Etiology).

*Social Habits*

Rick describes his life before his accident as “going out to clubs to dance and drinking too much”.

### Tests and measures

## Arousal, attention and cognition

He is alert and oriented x 4. He is able to attend to therapy activities without difficulty. He demonstrates a tendency toward concrete interpretation – has trouble abstracting. Appears to have mild memory impairment for more complex information. Speech is slow and moderately dysarthric. He is generally appropriate socially, and appears aware of his deficits, although he underestimates the degree of deficit.

## Cranial Nerve Integrity

Demonstrates R third cranial nerve palsy, photophobia, decreased acuity (20/200 by med record report) and diplopia. Is using a R eye patch. Wears corrective lenses.

## Gait, Locomotion and Balance

Balance: Sitting balance (static) is good. Occasional difficulty with dynamic balance in sitting if not attending to sitting task (eg reaching to tie shoes, fell forward out of chair). Standing balance with SBA for 10-15 seconds before loss of balance. Rick is unable to recover his balance without assistance.

Wheelchair mobility: Wheelchair propulsion is very slow for household mobility. He pushes himself with right extremities. His hips tend to slide forward out of the chair, and he does not seem to recognize this. He needs moderate assist to reposition himself in the wheelchair.

Ambulation: He ambulates with L AFO with a heel wedge in his shoe, LBQC, and min-mod A for up to 25 feet. Frequent losses of balance occur secondary to asymmetrical posture from ankle contracture.

*Motor Function*

Intention tremor observed in R UE and associated reactions (flexor pattern) with yawning.

L UE: Distal control better than proximal, with fair hand coordination. Severe difficulty with elbow and shld movement secondary to increases in flexor muscle activity with active effort

L LE: Control is influenced by stereotypical synergy patterns with strongest components ankle plantarflexion, hip adduction and internal rotation. Is able to activate all muscle groups at hip and knee. Ankle motion limited by contracture, although ankle dorisflexion and everter muscles are palpated.

Coordination: Smoothness and control of movement is severe affected on the L and mildly affected on R. Standardized tests of hand function (by OT) – Jebsen Test Hand Function: greater than 3 SDs below the mean for all subtests; Minnesota Rate of Manipulation Test: below 1st percentile. Influence of visual deficit is hard to factor out in these test results.

*Muscle Performance (Strength, Power, Endurance)*

Strength: R extremities WFL, MMT grades in 4-5/5 range.

Muscle tone: R UE associated reactions (flexor pattern) with yawning.

Increased flexor tone in L UE (pectorals, elbow flexors, and wrist).

Extensor tone influence in L LE.

## Posture

Sitting in w/c he is often posteriorly tilted at the pelvis with trunk flexion. Weightbearing in w/c is asymmetrical, more on R.

In standing weightbears mostly on R with forward flexion at both hips. L equinovarus forces L knee hyperextension. Is able to improve posture with cues, but does not maintain posture independently.

## Range of motion

Passive ROM: SLRs to 40 B; L ankle dorsiflexion –22 degrees, L shld flex 120, abd 70, ext rot 5, elbow ext –18, supination 60.

Active ROM: L shld flex/abd limited to 50, elbow extension –90, L LE movement within available range.

## Sensory Integrity

Appears intact for superficial sensations and proprioception.

## Self-Care and Home Management (ADL, IADL)

## Bed mobility: Independent, but slow.

## Transfers: Transfers stand-pivot with supervision.

## Work, Community and Leisure Integration or Reintegration

Community mobility is very slow in wheelchair. Orientation in new environments appears to be good. Some community contacts have difficulty understanding his speech.

**FOR QUESTION #8**

**Functional Gait Assessment**

Wrisley DM, Marchetti GF, Kuharsky DK, Whitney SL. Reliability, internal consistency, and validity of data obtained with the Functional Gait Assessment. *Phys Ther.* 2004*;*84: 906-918

Using patients with vestibular disorders and 10 raters: 7 PTs, 3 PT students, Wrisley reported ICC values of .86 and .74 (inter- and intra-rater reliability); Internal consistency of scores .79; Correlation coefficients of FGA scores and other measures DGI, ABC, DHI, TUG ranged from .50-.80, with a very low correlation .11 between FGA and foam-eyes closed scores.

1- Review the scoresheet for the FGA, developed by Diane Wrisley et al as an alternative to the Dynamic Gait Index.

This test deleted the “walking around obstacles” item from the DGI; and added three new items: gait with narrow base of support, gait with eyes closed, ambulating backwards.

2- Test members of your group on these new items, using the scoring system described by Wrisley.

**SCORESHEET FOLLOWS…..**