Imbalance, Dizziness & Vertigo

Monquen Huang, MD
Summary

- Targeted History
- Directed Physical Exam
- Common Diagnosis & Treatment
Sense of Balance

• From 3 organ systems
  – Eyes
  – Inner ears
  – Joints and muscles

• Our brains incorporate inputs from all 3 systems to have a “sense of balance”. Generally need 2 out of 3 to have a good sense of balance.
Gather History

- **Dizziness** – what do you mean?
  - 1. Illusion of movement (Spinning, rocking boat, falling, floating...)
  - 2. Lightheadedness/Near fainting
  - 3. Disequilibrium/imbalance – reduced balance when standing or walking, without 1 or 2

About 5-10% of patient unable to characterize symptoms
Gather History

• Timing – constant or intermittent
• Trigger – provoked or random
• Duration if intermittent
• Other associated symptoms
  – Hearing loss/ringing in ear
  – Headache
  – Irregular heart beat
  – Etc...
Physical Exam - Nystagmus

- Involuntary eye movement
Physical Exam - Nystagmus

- horizontal and/or torsional nystagmus – caused by inner ear issue
- upbeat or downbeat, sustained or asymmetric - central vestibular/cerebellum/brain stem nystagmus
Physical Exam – Head Thrust Test

- Used to detect impaired inner ear function by turning head quickly
Physical Exam – Dix-Hallpike exam

• Used to detect benign paroxysmal positional vertigo involving posterior canal of inner ear.

• A positive test is rotational nystagmus triggered by Dix-Hallpike exam
Physical Exam – Dix-Hallpike exam

Turn the head 45 deg to the side being tested.
Physical Exam – Supine Head Roll Test

- Used to detect benign paroxysmal positional vertigo involving horizontal canal of inner ear.
- A positive test is lateral nystagmus triggered by exam.
Physical Exam – Supine Head Roll Test
## Physical Exam – orthostatic vital sign

<table>
<thead>
<tr>
<th>Position</th>
<th>Blood Pressure</th>
<th>Heart Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supine</td>
<td>150/80</td>
<td>70</td>
</tr>
<tr>
<td>Sitting</td>
<td>140/70</td>
<td>70</td>
</tr>
<tr>
<td>Standing</td>
<td>110/50</td>
<td>100</td>
</tr>
</tbody>
</table>
Physical Exam – Sensory Test

- Test of body’s sense of position
- Vibration, reflex, Romberg’s test
- Test for sensory pathway to brain, eg, neuropathy
Diagnostic Testing

- Blood test
- Hearing test/audiometry
- CT or MRI of brain
- Videonystagmography (VNG)
- Tilt Table Testing
- Extended cardiac monitoring
Case 1

- 50 year old lady
- Feels brief spinning sensation whenever she lies back in bed or turn quickly to one side
- Started after recent minor head injury
- Positive Dix-Hallpike exam
Diagnosis – Benign Positional Vertigo

- Most common cause of recurrent vertigo
- Episodic, lasting 10-30 seconds
- Provoked by certain tilting positions
- Diagnosed by Hallpike exam or supine head roll test
- Treatment - Epley Maneuver – exercise to reposition the otolith
Diagnosis – Benign Positional Vertigo
Diagnosis – Benign Positional Vertigo

Left Epley Maneuver
Case 2

• 45 years old man
• Had flu-like symptom about 1 week ago then sudden developed vertigo, nausea and gait imbalance

• Positive head thrust test
Diagnosis – Vestibular Neuritis

• Most commonly due to reactivation of herpes simplex virus in the vestibular ganglion
• Diagnosed by nystagmus that does not change direction or head thrust test
• Symptoms may begin suddenly or may evolve over time
• Aggravated by head motion or seeing things in motion
• Gradually resolves in days to weeks
Diagnosis – Vestibular Neuritis

- Supportive treatment first
- May consider short course of steroids
- Medication for vertigo
<table>
<thead>
<tr>
<th>Medication</th>
<th>Potential Side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benadryl/diphenhydramine</td>
<td>urinary retention, dry mouth</td>
</tr>
<tr>
<td>Antivert/meclizine</td>
<td>urinary retention, dry mouth</td>
</tr>
<tr>
<td>Transderm/scopolamine patch</td>
<td>urinary retention, dry mouth</td>
</tr>
<tr>
<td>Ativan/lorazepam</td>
<td>sedation</td>
</tr>
<tr>
<td>Valium/diazepam</td>
<td></td>
</tr>
<tr>
<td>Klonopin/clonazepam</td>
<td></td>
</tr>
<tr>
<td>Phenergan/promethazine</td>
<td>sedation, lower seizure threshold</td>
</tr>
<tr>
<td>Reglan/metoclopramine/</td>
<td>induced movement disorder</td>
</tr>
<tr>
<td>Compazine/prochlorperazine</td>
<td></td>
</tr>
<tr>
<td>Zofran/ondansetron</td>
<td>fatigue, diarrhea, cardiac arrhythmia</td>
</tr>
</tbody>
</table>
Case 3

- 55 year old lady
- Recurrent episodes of severe vertigo with hearing loss and ringing in left ear
- Triggered by stress
- Lasts a few days
Diagnosis – Meniere’s disease

• Recurrent, spontaneous attacks of vertigo, usually spinning, associated with hearing loss, ear fullness or ringing
• Episodes lasts hours to days
• Most commonly age 40-60
• Caused by electrolyte imbalance in inner ear
• Treatment – low sodium diet, water pill, if severe steroid injection, surgery
Case 4

- 65 years old male with uncontrolled diabetes
- Has leg numbness and tingling, worse at night
- Gait imbalance – trip easily in the dark or when walking outdoors

- Positive Romberg’ Test, decreased sensation in feet
Diagnosis – Peripheral Neuropathy

• Lack of sensory feedback from muscles and joints causes imbalance
• Treat the underlying cause – treat the neuropathy
• Exercise for neuropathy
Case 5

- 70 years old female with high blood pressure
- Feels lightheaded when standing up, worse in the morning, or after have been sitting for a while
- Resolves seconds to minutes

- Blood pressure drops when changing from supine position to standing position
Diagnosis – Orthostatic hypotension

- Sudden drop in blood pressure when a person stand/sit up

- Caused by
  - Certain medications
  - Weak Heart
  - Hormone or nerve issues
  - Dehydration - diarrhea, vomiting, sweating

- Treatment
  - Change position slowly, adequate hydration, compression stockings, medications
Case 6

- 60 y/o male with came to emergency room with sudden onset of vertigo, slurred speech and left sided weakness

- MRI brain showed abnormality
Diagnosis – Central Vertigo

• **Much less common** than etiology caused by inner ear
• Vascular – stroke, hemorrhage
• Structural – tumor, cyst
• Metabolic – toxin, substance abuse
• Genetic disease – family history, occur at young age
• Autoimmune - Multiple Sclerosis
• Degenerative – Parkinson’s disease
Case 7

- 25 years old male with history of migraine
- Prior migraine headache would be associated with vertigo
- However recently noted just have vertigo without the migraine headache
Diagnosis – Vestibular Migraine

• Cause is unknown, but brainstem is hypersensitivity to stimuli
• Duration varies widely – few minute to few weeks
• Associated with visual vertigo – seeing object in motion causes dizziness
• May or may not occur with headache
• Treat like a migraine headache
Case 8

- 45 years old female
- Has floating/rocking sensation daily for few months
- Worse when stressed
Diagnosis – Chronic subjective dizziness

• Cause is unknown
• Definition – lasting more than 3 months
• Affect females more than males (5:1)
• Often describe as “rocking” or “floating” without nausea and not worsened by head motion
• Symptoms worsened by stress or sleep deprivation and associated with visual vertigo
Diagnosis – Chronic subjective dizziness

• Treatment
  – Address underlying cause – stress, sleep deprivation
  – Vestibular therapy
  – Antidepressant
Overlaps in vestibular migraine and chronic subjective dizziness

<table>
<thead>
<tr>
<th>Feature</th>
<th>Chronic Subjective Dizziness</th>
<th>Vestibular Migraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Abrupt (especially if after an emotionally impactful event), less often gradual</td>
<td>Abrupt or gradual onset</td>
</tr>
<tr>
<td>Description</td>
<td>Rocking, swaying, or floating</td>
<td>Spinning, rocking, tilting, floating, general motion intolerance, and motion sickness</td>
</tr>
<tr>
<td>Migraine headaches</td>
<td>Present in about 25% of cases</td>
<td>Present in more than 80% of cases</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Present in two-thirds of cases</td>
<td>Present in nearly one-half of cases</td>
</tr>
<tr>
<td>Effect of vestibular rehabilitation therapy</td>
<td>Modest improvement in some</td>
<td>Minimal if any improvement</td>
</tr>
<tr>
<td>Examination</td>
<td>Normal</td>
<td>Normal, possibly cautious gait</td>
</tr>
<tr>
<td>Nausea</td>
<td>Uncommon</td>
<td>Common</td>
</tr>
<tr>
<td>Visual vertigo</td>
<td>Common</td>
<td>Common</td>
</tr>
</tbody>
</table>
Summary

• Targeted History
• Directed Physical Exam
• Common Diagnosis & Treatment
Thank You
Background

- Studies link poor balance and increased risk of fall to serious injury and lifestyle decline
- Exercise, Balance Training and Fall prevention are a very important component of healthcare
- Balance impairments can be caused by a variety of body systems and external causes
- Energy conservation can allow for more activity that you prefer doing.
Falls are Costly

- **One out of five** falls causes a **serious** injury such as broken bones or a head injury.

- **95%** of **hip fractures** are caused by falls, usually by falling sideways.

- Falls are the most common cause of **traumatic brain injury**.

- **One in four** people aged 65 and older **falls** each year.

- **$50 billion**. Total medical costs for falls in 2015.

- Torrance Fire Department responds to **100 calls about falls per month**.
Under reporting falls / balance issues

- Why don’t we ask for help?
  - Fear of growing old
  - Fear of loss of independence
  - Fear of perceived peer judging for using assistive devices
  - Fear of losing ability to stay in own home
  - Fear of loss of quality of life
  - Lack of full understanding of the consequences of falls
How do we Balance?

- Vision
- Muscle Strength
- Vestibular (inner ear) Dr. Huang’s lecture
- Proprioception (knowing where your body is in space)
- Brain / Memory (manager of all systems)
Why do we fall?

- When our Center of Gravity (COG) exceeds our Base of Support (BOS).
Falls

Relationship of the Line of Gravity to the Base of Support

- To maintain equilibrium, line of gravity must remain within its base of support
Enlarging your BOS

B Extending base of support to capture center of mass

1 Disturbance

2 Responses

- Sway
- Stepping
- Using arm for support
Balance Assessments / Observations

- Do you “furniture cruise?” – is this your first clue?
- Do you have a fear of falling? Confidence?
- 4-stage Balance Test
- Timed Up and Go (TUG)
- 30 Sec Chair Rise Test
- Formal Clinical Testing – Tinetti, Functional Gait Analysis, Berg Balance
- STEADI questionnaire
# Check Your Risk for Falling

<table>
<thead>
<tr>
<th>Circle “Yes” or “No” for each statement below</th>
<th>Why it matters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (2) I have fallen in the past year.</td>
<td>People who have fallen once are likely to fall again.</td>
</tr>
<tr>
<td>Yes (2) I use or have been advised to use a cane or walker to get around safely.</td>
<td>People who have been advised to use a cane or walker may already be more likely to fall.</td>
</tr>
<tr>
<td>Yes (1) Sometimes I feel unsteady when I am walking.</td>
<td>Unsteadiness or needing support while walking are signs of poor balance.</td>
</tr>
<tr>
<td>Yes (1) I steady myself by holding onto furniture when walking at home.</td>
<td>This is also a sign of poor balance.</td>
</tr>
<tr>
<td>Yes (1) I am worried about falling.</td>
<td>People who are worried about falling are more likely to fall.</td>
</tr>
<tr>
<td>Yes (1) I need to push with my hands to stand up from a chair.</td>
<td>This is a sign of weak leg muscles, a major reason for falling.</td>
</tr>
<tr>
<td>Yes (1) I have some trouble stepping up onto a curb.</td>
<td>This is also a sign of weak leg muscles.</td>
</tr>
<tr>
<td>Yes (1) I often have to rush to the toilet.</td>
<td>Rushing to the bathroom, especially at night, increases your chance of falling.</td>
</tr>
<tr>
<td>Yes (1) I have lost some feeling in my feet.</td>
<td>Numbness in your feet can cause stumbles and lead to falls.</td>
</tr>
<tr>
<td>Yes (1) I take medicine that sometimes makes me feel light-headed or more tired than usual.</td>
<td>Side effects from medicines can sometimes increase your chance of falling.</td>
</tr>
<tr>
<td>Yes (1) I take medicine to help me sleep or improve my mood.</td>
<td>These medicines can sometimes increase your chance of falling.</td>
</tr>
<tr>
<td>Yes (1) I often feel sad or depressed.</td>
<td>Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.</td>
</tr>
</tbody>
</table>

**Total**

Add up the number of points for each “yes” answer. If you scored 4 points or more, you may be at risk for falling. Discuss this brochure with your doctor.

This checklist was developed by the Greater Los Angeles VA Geriatric Research Education Clinical Center and affiliates and is a validated fall risk self-assessment tool (Rubenstein et al. J Safety Res; 2011; 42(6):493-499). Adapted with permission of the authors.
Activity

ASSESSMENT CONTINUED

The 4-Stage Balance Test

Instructions to the patient:
- I’m going to show you four positions.
- Try to stand in each position for 10 seconds.
- You can hold your arms out, or move your body to help keep your balance, but don’t move your feet.
- For each position I will say, “Ready, begin.” Then, I will start timing. After 10 seconds, I will say, “Stop.”

1. Stand with your feet side-by-side.
   Time: _______ seconds

2. Place the instep of one foot so it is touching the big toe of the other foot.
   Time: _______ seconds

3. Tandem stand: Place one foot in front of the other, heel touching toe.
   Time: _______ seconds

4. Stand on one foot.
   Time: _______ seconds

Notes:

____________________________________________________
____________________________________________________
____________________________________________________

CDC’s STEADI tools and resources can help you screen, assess, and intervene to reduce your patient’s fall risk. For more information, visit www.cdc.gov/steadi

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control
2017

STANDS
Stopping Elderly Accidents, Deaths & Injuries
ABC Scale

ABC SCALE / THE ACTIVITIES-SPECIFIC BALANCE CONFIDENCE SCALE

For each of the following activities, please indicate your level of self-confidence by choosing a corresponding number from the following rating scale:

How confident are you that you will not lose your balance or become unsteady when you...

1. ... walk around the house?
2. ... walk up or down stairs?
3. ... bend over and pick up a slipper from the front of a closet floor?
4. ... reach for a small can off a shelf at eye level?
5. ... stand on your tiptoes and reach for something above your head?
6. ... stand on a chair and reach for something?
7. ... sweep the floor?
8. ... walk outside the house to a car parked in the driveway?
9. ... get into or out of a car?
10. ... walk across a parking lot to the mall?
11. ... walk up or down a ramp?
12. ... walk in a crowded mall where people rapidly walk past you?
13. ... are bumped into by people as you walk through the mall?
14. ... step onto or off an escalator while you are holding onto a railing?
15. ... step onto or off an escalator while you holding onto parcels such that you cannot hold onto the railing?
16. ... walk outside on icy sidewalk?
Activity

ASSESSMENT

Timed Up & Go (TUG)

Purpose: To assess mobility

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a walking aid, if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters, or 10 feet away, on the floor.

③ Instruct the patient:

When I say “Go,” I want you to:
1. Stand up from the chair.
2. Walk to the line on the floor at your normal pace.
3. Turn.
4. Walk back to the chair at your normal pace.
5. Sit down again.

③ On the word “Go,” begin timing.
③ Stop timing after patient sits back down.
③ Record time.

Time in Seconds:

An older adult who takes ≥12 seconds to complete the TUG is at risk for falling.

NOTE: Always stay by the patient for safety.

OBSERVATIONS

Observe the patient’s postural stability, gait, stride length, and sway.

Check all that apply:
- Slow tentative pace
- Loss of balance
- Short strides
- Little or no arm swing
- Steadying self on walls
- Shuffling
- En bloc turning
- Not using assistive device properly

These changes may signify neurological problems that require further evaluation.

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STEADI Stopping Elderly Accidents, Deaths & Injuries
Activity

- 30-second Chair Rise Test

- When I say, “go,” you will stand up without using your arms, sit down, and repeat as many times as you can in 30 seconds.

- Please only participate if you feel this is appropriate.
ASSESSMENT

30-Second Chair Stand

**Purpose:** To test leg strength and endurance

**Equipment:** A chair with a straight back without arm rests (seat 17” high), and a stopwatch.

1. **Instruct the patient:**
   1. Sit in the middle of the chair.
   2. Place your hands on the opposite shoulder crossed, at the wrists.
   3. Keep your feet flat on the floor.
   4. Keep your back straight, and keep your arms against your chest.
   5. On “Go,” rise to a full standing position, then sit back down again.
   6. Repeat this for 30 seconds.

2. **On the word “Go,” begin timing.**
   If the patient must use his/her arms to stand, stop the test.
   Record “0” for the number and score.

3. **Count the number of times the patient comes to a full standing position in 30 seconds.**
   If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

4. **Record the number of times the patient stands in 30 seconds.**

   | Number: | Score: |

**SCORING**

<table>
<thead>
<tr>
<th>Chair Stand Below Average Scores</th>
<th>AGE</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-64</td>
<td>&lt; 14</td>
<td>&lt; 12</td>
<td></td>
</tr>
<tr>
<td>65-69</td>
<td>&lt; 12</td>
<td>&lt; 11</td>
<td></td>
</tr>
<tr>
<td>70-74</td>
<td>&lt; 12</td>
<td>&lt; 10</td>
<td></td>
</tr>
<tr>
<td>75-79</td>
<td>&lt; 11</td>
<td>&lt; 10</td>
<td></td>
</tr>
<tr>
<td>80-84</td>
<td>&lt; 10</td>
<td>&lt; 9</td>
<td></td>
</tr>
<tr>
<td>85-89</td>
<td>&lt; 8</td>
<td>&lt; 8</td>
<td></td>
</tr>
<tr>
<td>90-94</td>
<td>&lt; 7</td>
<td>&lt; 4</td>
<td></td>
</tr>
</tbody>
</table>

A below average score indicates a risk for falls.

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Berg Balance Test

- Sitting to stand
- Standing unsupported
- Sitting with back unsupported
- Standing to sitting
- Transfers (chair to chair)
- Standing eyes closed
- Standing feet together
- Reaching forward
- Picking up item from floor
- Turning and looking behind shoulder
- Turn 360 degrees
- Step tapping
- Tandem stance
- Single Leg Stance
## Tinetti Balance Assessment Tool

### BALANCE SECTION

Patient is seated in hard, armless chair;

<table>
<thead>
<tr>
<th>Sitting Balance</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leans or slides in chair</td>
<td>0</td>
</tr>
<tr>
<td>Steady, safe</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rises from chair</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to without help</td>
<td>0</td>
</tr>
<tr>
<td>Able, uses arms to help</td>
<td>1</td>
</tr>
<tr>
<td>Able without use of arms</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attempts to rise</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to without help</td>
<td>0</td>
</tr>
<tr>
<td>Able, requires &gt; 1 attempt</td>
<td>1</td>
</tr>
<tr>
<td>Able to rise, 1 attempt</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Immediate standing Balance (first 5 seconds)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsteady (staggering, moves feet, trunk sway)</td>
<td>0</td>
</tr>
<tr>
<td>Steady but uses walker or other support</td>
<td>1</td>
</tr>
<tr>
<td>Steady without walker or other support</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standing balance</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsteady</td>
<td>0</td>
</tr>
<tr>
<td>Steady but wide stance and uses support</td>
<td>1</td>
</tr>
<tr>
<td>Narrow stance without support</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nudged</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begins to fall</td>
<td>0</td>
</tr>
<tr>
<td>Stagger, grab, catches self</td>
<td>1</td>
</tr>
<tr>
<td>Steady</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eyes closed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsteady</td>
<td>0</td>
</tr>
<tr>
<td>Steady</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Turning 360 degrees</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discontinuous steps</td>
<td>0</td>
</tr>
<tr>
<td>Continuous</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unsteady (grabs, staggering)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sitting down</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsafe (misjudged distance, falls into chair)</td>
<td>0</td>
</tr>
<tr>
<td>Uses arms or not a smooth motion</td>
<td>1</td>
</tr>
<tr>
<td>Safe, smooth motion</td>
<td>2</td>
</tr>
</tbody>
</table>

### GAIT SECTION

Patient stands with therapist, walks across room (+/- aids), first at usual pace, then at rapid pace.

<table>
<thead>
<tr>
<th>Indication of gait</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Immediately after told to 'go')</td>
<td></td>
</tr>
<tr>
<td>Any hesitancy or multiple attempts</td>
<td>0</td>
</tr>
<tr>
<td>No hesitancy</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step length and height</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step to</td>
<td>0</td>
</tr>
<tr>
<td>Step through R</td>
<td>1</td>
</tr>
<tr>
<td>Step through L</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foot clearance</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot drop</td>
<td>0</td>
</tr>
<tr>
<td>L foot clears floor</td>
<td>1</td>
</tr>
<tr>
<td>R foot clears floor</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step symmetry</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right and left step length not equal</td>
<td>0</td>
</tr>
<tr>
<td>Right and left step length appear equal</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step continuity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stopping or discontinuity between steps</td>
<td>0</td>
</tr>
<tr>
<td>Steps appear continuous</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Path</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked deviation</td>
<td>0</td>
</tr>
<tr>
<td>Mild/moderate deviation or uses w. aid</td>
<td>1</td>
</tr>
<tr>
<td>Straight without w. aid</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trunk</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked sway or uses w. aid</td>
<td>0</td>
</tr>
<tr>
<td>No sway but flex. knees or back or uses arms for stability</td>
<td>1</td>
</tr>
<tr>
<td>No sway, flex., use of arms or w. aid</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Walking time</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heels apart</td>
<td>0</td>
</tr>
<tr>
<td>Heels almost touching while walking</td>
<td>1</td>
</tr>
</tbody>
</table>

### Gait score /12

### Balance score carried forward /16

### Total Score = Balance + Gait score /28

<18 = High ROF, 19-23 = Moderate ROF, >24 = Low ROF
Functional Gait Analysis

Taped lines 1 foot wide, distance of 20 feet (6 meters), each 0-3 points

- Gait Level Surface
- Change in Gait Speed
- Gait with horizontal head turns
- Gait with vertical head turns
- Gait with a pivot turn
- Step over obstacle
- Gait with narrow base of support
- Gait with eyes closed
- Ambulating backwards
- Steps (stairs)

Score of <=23/30 indicates assistive device appropriate for community ambulation to avoid fall.
So, Can I Practice?

- First of all, always practice safely.
- You can do any of these tests as your practice.
- Use a kitchen counter for your hands.
- Use a stable chair behind you to rest.
- Use a bed if you are worried you may fall backward.
- ASK FOR HELP!!!!
Posture

- Use proper posture at all times.
- Proper alignment – ears over shoulders over hips over knees over ankles
- Maintain proper shoulder, hip, and ankle range of motion and strength for normal gait and to avoid injury.
- Exercise can help improve balance.
- Proper posture can allow for improved gas exchange in your lungs, proper vestibular function, and decreased pain in back and legs.
Other Obstacles to Good Balance

- Multiple medications
- Blood Pressure (orthostatic hypotension)
- Joint Pain (back pain, knee pain/buckling, ankle pain, etc)
- Muscle Weakness / Deconditioning
- Multiple Diagnoses (TIA, CVA, Vertigo, PVD, Peripheral Neuropathy, Parkinson’s Disease, etc)
Poor Balance and Decreased Energy

Balance Testing

Balance Classes
- Beginner
- Intermediate
- Advanced

Skilled Physical Therapy and Occupational Therapy

Community Exercise Classes at TMMC via Healthlinks
Formal Balance Assessments

- Have your balance assessed by a rehabilitation expert, which is available several times per year at Torrance Memorial Medical Center through Healthlinks or Rehabilitation Department.
- Exercise should include balance activities to improve balance and avoid falls.
- CDC Recommends balance exercises are 2-3 days/week.
Rehabilitation Services at TMMC

- Outpatient Treatment is available for patients at risk of fall
- Rehabilitation Services
  - MD prescription necessary
  - Accept a variety of insurance, including Medicare
- Balance Assessed as part of treatment
Rehabilitation Services at TMMC

Variety of Diagnoses Treated:

- CVA
- Orthopedic surgeries
- TBI
- Joint replacement
- Neurologic disorders
- Vascular disorders
- Limb Amputation
- Balance Deficits
- Deconditioned and Debility
- Parkinson’s
- And many more!
Balance Programs at TMMC

- Community Balance Exercise Classes through Healthlinks
  - Quarterly Balance Checks – assessment of current risk of fall and correct placement in Balance Class
  - No prescription required

- Classes taught by licensed Physical and Occupational Therapists
  - Beginning Balance Class (Fall Prevention)
  - Intermediate Balance Class (B.E.S.T.), prerequisite testing required (Tinetti)
  - Advanced Balance Class (Power Balance)
Beginning Balance Class

- Fall Prevention
- 1.5 hour class
- Community Ambulator and Limited Community Ambulator who is noticing balance isn’t what it used to be
- People who “weave” into your office
- Difficulty negotiating curbs and stairs
- Exercises, Tai Chi, Stretching
- Home Safety Evaluation
Intermediate Balance Class

- BEST Balance – Balance, Endurance and Strength Training
- 50 minute Class for the patient who is a community ambulator or limited community ambulator, with only a cane or no assistive device
- Participant must be pre-tested via Balance Assessment with Tinetti Test
- Class is taught in the Rehab Gym
- For patient who feels their balance isn’t what it used to be
- Focus is on Functional Gait and Exercise Activities
- Increasing Endurance
- Safe Community Ambulation
- Use of Eyes Open/Closed, head turns, and stepping strategy
Advanced Balance Class

- Power Balance
- Designed for the community ambulator, no assistive device or SPC lightly.
- Great for people post-surgical orthopedic (knee, hip, total knee/hip, back, ankle sprains, just noticing balance is impaired.
- Will improve strength, balance proprioception, athletic activities, gait, etc.
- Taught by a physical therapist.
Energy Conservation

- 5 P’s
  - Planning
  - Pacing
  - Prioritizing
  - Positioning
  - Purse-Lip Breathing
Planning

- Take a look at your day/week in the morning, or the day before.
- Plan activities throughout the day, giving ample time to complete each task.
- Don’t overschedule your day.
- It’s okay to revise your plan.
- Plan individual tasks before you start.
- Find locations where you can sit and rest if necessary.
Pacing

- Take ample time to complete each project.
- Don’t rush through task.
- Avoid multitasking when fatigued.
- Factor in rest breaks with functional activities.
- Pace each activity, and pace all daily activities.
Prioritizing

- Perform physically challenging items when your energy level is at its peak. (Some people are better in the morning, some in the afternoons.)
- Layer physically challenging tasks with easy physically tasks. (Going to MD vs paying bills)
- Perform most important tasks when mental alertness at peak.
- Avoid complicated tasks when mental alertness is stressed.
- Consider delegating tasks that aren’t important to you. (Cleaning house vs house keeper.)
Positioning

- Place cabinet items most used in shelves closest to your reach.
- Place chairs in various places to allow for rest breaks if needed.
- Use body with breathing – exhale with bending over, inhale with coming back up to coordinate.
Pursed Lip Breathing

“Smell the flower, blow out the candle.”

- Inhale through your nose, exhale with pursed lips to allow for slower exhale than inhale.
- Allows for improved gas exchange in the lungs.
If you have ANY questions, call us!

310/517-4735
Ask to speak with a therapist, and we’ll help you direct person to the best level of care.
Any Questions?
Thank You!