

Balance and Fall Prevention

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Introduction of PT's

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What is balance?

A biological system that allows us to know where our bodies are in the environment.

Depends on information from 3 systems in the body:

- Vestibular (inner ear)
- Somatosensory (touch, position, movement)
- Visual (sight)

Can be impaired with certain diagnoses

- Stroke, Parkinson's, Multiple Sclerosis, Diabetic Neuropathy, Post Surgical, Vertigo/BPPV, Concussion

Description of Balance System

Vestibular Component:

- Central (brain) and peripheral (inner ear) systems
- Related to our sense of equilibrium and feeling centered
- Disorders include history of stroke, vertigo/BPPV

Description of Balance System

Somatosensory Component:

- Conscious perception of physical sensations including touch, position, and movement
- Body position, trunk/extremity control and awareness, sensation in feet to determine surfaces
- Diabetes is a very common cause of impaired sensation in hands and feet

Description of balance system

Visual Component:

- Ability to perceive the environment through sight
- Visual impairments and poorly lit areas

Demonstration of how components affect balance

Vestibular system

- head turns (Side to side and looking down/up)

Somatosensory system

- narrowed base of support, with and without use of Airex (Foam)

Visual

- Eyes open/closed conditions

General Fall Risk Factors

1. The number one reason people fall is the fear itself!!

- a. Usually people “think” they will fall and often times that exact thing happens.

2. Visual impairments

- a. Bring your glasses or have several pairs throughout the house or in the car
- b. Get yearly assessments as needed and bring up new issues with the doctor

3. Medication side effects

- a. Dizziness, hypotension (low blood pressure)

4. Weakness, poor endurance, limited balance

General Fall Risk Factors

7. Poor sensation (particularly in feet/legs)

- a. Typically people with diabetes or new post surgical recipients

8. History of previous falls

- a. Individuals experience heightened anxiety
- b. Decreased confidence which can cause impaired balance and increased fall risk

9. Poor planning

- a. Rushing out the door and/or being in a hurry causes decreased safety
- b. Plan ahead!

General fall risk factors: Medical conditions

Parkinson's

- Shuffling gait pattern
- Rigidity
- Difficulty with transitions on different surfaces (Examples: carpet to tile floor or grass to gravel)

CVA

- Hemiparesis
- Coordination of both brain halves not working together
- Weakness or neglect of affected side

General fall risk factors: Medical conditions

Post surgical

- Impaired sensation
- New or ongoing muscular weakness
- Inactivity secondary to being in hospital or restrictions from physician

Diabetes

- Decreased sensation to the hands and especially feet
- Dizziness or change in mentation as sugars are either high or drop down low

UTI's

- Increased confusion
- Not able to follow commands well

Home assessment and tips for reduced fall risk

A. Clutter on floor (decorations, throw rugs, toys, etc)

B. Flooring

- Thresholds, carpet vs. tile/wood

C. Getting up from bed or couch

- Take your time!
- Use arm rests
- Add risers to chair/couch legs as needed

D. Small animals

- You can have them! Just be aware of their whereabouts.

Home assessment and tips for reduced fall risk

E. Lighting

- Consider use of nightlight for trips to the bathroom
- Ensure lights on exterior of home are in working order
- Avoid walking in poorly lit areas including the yard

F. Railings

- Install on all stairways, including exterior stairs

G. Grab bars in bathroom

- If bathroom layout does not allow for this, consider use of commode frame

Home assessment and tips for reduced fall risk

H. Holiday Decorating

- Practice safe lifting – use legs and do not lift more than you can handle
- Carrying decorations/boxes – be aware of your surroundings and clear a path before walking
- Ladders and stools – avoid as able if balance is limited; if you must use these, stay near a support surface like a counter or wall; have someone with you for safety

Assessment and fitting of an Assistive device

Cane / walker height (Demonstration)

- Proper use of assistive device with walking patterns

Crutch height (Demonstration)

- Proper use of crutches

Wheelchair fitting

Wheelchair propulsion

Ambulation outdoors and in community

A. Getting in/out of cars:

- Low car (sedan, etc): Turn and scoot forward so that your feet are securely on the ground outside, use your hands on the seat, dash, door frame, etc (avoid use of the door)
- Truck/SUV: Turn and carefully scoot to the front edge of the seat until your feet are securely on the ground, using your hands on the seat as needed; if a running board is available, place one foot on the running board first as if you are going down stairs

Ambulation outdoors and in community

B. Wet, icy surfaces:

- Slow down!
- Scan your surroundings - watch for wet or icy areas on surfaces, look up to avoid obstacles
- Widen your stance and take slow steps
- Use an assistive device as needed and/or have someone with you
- Proper footwear – no slip on shoes, proper fit, good traction

Ambulation outdoors and in community

C. Congested areas:

- Slow down!
- Scan your surroundings and keep your head up as able
- Do not rush across the street, up curbs, steps, etc
- Use assistive devices as needed for stability and to make others aware of limitations/give you space

Assessment of balance: Tests

5x sit to stand or 30 second sit to stand

- Sit in a chair with your arms across your chest (no use of hands permitted)
- Time starts when your bottom leaves the chair and stops when your bottom is back in the chair after the 5th repetition
- Greater than 15 seconds to complete task = increased risk of falls

Assessment of balance: tests

Balance with varying base of support (perform in this order and stop if unsafe)

- Feet together: hold for up to 30 seconds; if no major loss of balance, proceed to next
- Tandem stance (one foot directly in front of the other): Hold for up to 30 seconds. Alternate which foot is in front and perform again; if no major loss of balance, proceed to next
- Single leg stance: Hold for up to 30 seconds and perform on each foot. Unable to hold position greater than 5 seconds = increased risk of falls

Exercise program for balance (with demonstration)

Sit to stand from chairs of different heights and material

- Use hands to assist only as needed

Standing hip abduction and extension

- Stand with counter or chair in front for support
- Hip Extension - Kick one leg backwards, keeping knee straight and engaging buttocks. Avoid leaning forward as you kick backward.
- Hip Abduction - Kick one leg out to the side, keeping knee straight and toes pointing forwards

Exercise program for balance (with demonstration)

Stationary marching with and without upper extremity (arm) supports

Heel/toe raises

Single leg stance

- Stand near support surface (counter or chair)
- 3 sets of up to 30 seconds on each foot

Tandem stance

- 3 sets of up to 30 seconds on each foot

Exercise program for balance (with demonstration)

Side stepping

Forward walking around obstacles and tighter spaces

Practice whole tasks (Example: getting into/out of a dining room chair for meals)

VOR (Vestibulo-ocular Reflex) exercises

- Eye/gaze stabilization exercises
- Begin seated and progress to standing
- Start with 10-15 seconds each and progress to 30 seconds each, several sets

Questions/Comments?

Physical Therapy & Rehab| Powell (located in the Powell Wellness Center building)

- Patient populations treated: pediatrics, adults and geriatrics
- Specialty programs offered:
 - LSVT BIG/LOUD for patients with Parkinson's or CVA/other neurological conditions
 - Concussion and Vestibular programs
 - Other Programs - Women's health, Aquatics, Dry needling, Orthopedics, Amputees, Oncology, Lymphedema

Other PT/OT/ST locations:

- Physical Therapy & Rehab| Culpeper (Meadowbrook Shopping Center)
- Physical Therapy & Rehab| Madison

Contact Us

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