



Objective assessment and customized treatment help patient overcome balance problems and dramatically reduce fall risk.

Patient Profile

Patient: 79-year-old female

Complaint: Generalized weakness and loss of balance

Diagnosis: Abnormality of gait

History & Symptoms: The patient's past medical history was significant for hypertension and high cholesterol, which were managed with medication. She denied falling but stated that she was "extremely worried about falling," and had begun ambulating with a cane secondary to "feeling unsteady." The patient's physician had performed a full neurological workup with negative results.

Assessment

Ambulation: Patient ambulated with a cane secondary to a "feeling of unsteadiness". The patient's gait exhibited common compensations for poor balance: a shortened stride length, decreased ankle dorsiflexion at heel strike, reduced hip extension and push off bilaterally.

Strength:

Sit to stand test: Unable to stand from chair without using hands.

Hip Abduction: At initial evaluation: 3-/5 bilaterally. At discharge: 5/5

Hip Extension: At initial evaluation: 3-/5 bilaterally. At discharge: 5/5

Gastrocnemius: At initial evaluation: 3-/5 bilaterally. At discharge: 5/5

Anterior Tibialis: At initial evaluation: 3+/5 bilaterally. At discharge: 5/5

Active ROM: Patient had significantly reduced cervical rotation right > left.

Objective Balance Testing:

Berg Balance Scale Score: At initial evaluation: 32. At discharge: 42

Berg Balance Scale:

41-56 = low fall risk

21-40 = medium fall risk

0-20 = high fall risk

Dynamic Gait Index Score: At initial evaluation: 15. At discharge: 22

Dynamic Gait Index:

<19/24 = predictive of fall in the elderly

>22/24 = safe ambulators



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Treatment Program

- The patient's program consisted of closed chain total leg strengthening, core strengthening, and cervical range of motion exercises.
- To improve her static balance, the patient was asked to stand on a variety of balance boards and foam devices with her eyes closed and open.
- Dynamic balance was improved using the treadmill to develop proper gait mechanics. Emphasis was placed on proper heel strike with adequate ankle dorsiflexion, hip extension with a strong push-off. After proper gait mechanics were restored, the patient was progressed from 2-handed support to no upper body support.
- The patient demonstrated significant measurable improvements in her lower extremity strength, as well as her static and dynamic balance.
- She was discharged to a home exercise program after being seen two times per week for 14 weeks.
- The most important consideration in treating balance and strength disorders is to create objective standards for each patient. Once these standards have been established the patient is given home exercises to maintain these standards.

Discussion

Falls are a common and serious problem for the elderly, and are associated with significant mortality, morbidity, decreased independent functioning and premature admission to the hospital. In addition, the fear of falling sets in motion a vicious cycle, which causes older adults to limit their physical activity – leading to more loss of muscle mass and loss of balance.

On the Berg scale, this patient's score rated her as medium fall risk. However, it has been clinically proven that this category represents the group that is most likely to fall. The high-risk category of patients is more likely to use canes, walkers and other home assistive devices to reduce their risk of falling.

This patient also demonstrated common compensations for poor balance. Unfortunately, these compensations create a progressive loss of balance because the patient progressively stops challenging their balance system. Balance requires a complex interaction between the body's neural and mechanical systems, which combines visual and sensory information to coordinate muscle activity. Compensation gradually impairs these complex interactions.

Our job was to objectively identify the variables contributing to the patient's balance problem and then create exercises that required interaction between these complex systems.

Quick Facts

1. Falls are the leading cause of accidental death and the seventh leading cause of death in persons ≥ 65 .
2. According to the National Safety Council each week 30,000 people over 65 are seriously injured by a fall; nearly 250 die from their injuries. Of those who do survive a fall, 20 to 30 percent suffer from debilitating injuries that affect them the rest of their life.
3. Two-thirds of those who experience a fall will fall again within six months.



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