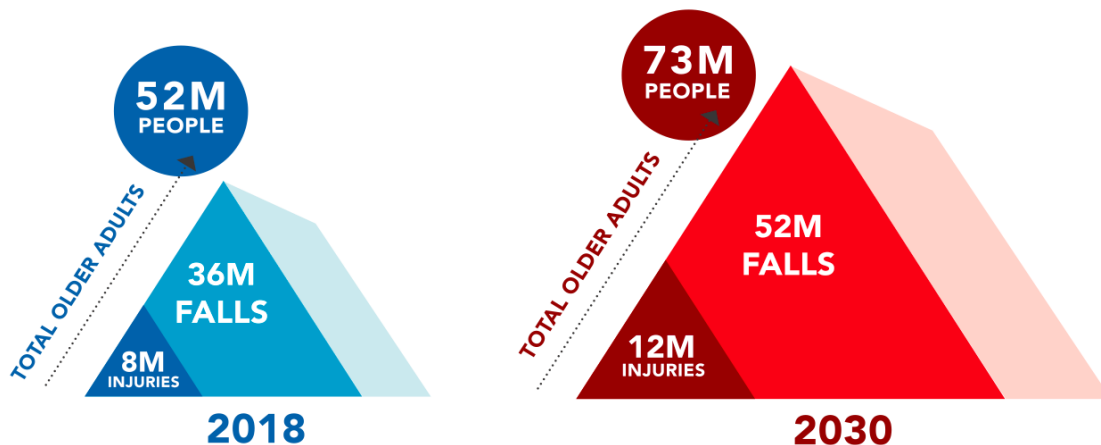


The Complete Guide to Balance Training - Part 1 of 5

Introduction to Falls

Accidental falls are one of the most concerning health-related issues for older adults. Over 25% of older adults fall in the United States every year and result in the highest number of accident-related deaths for the older age cohort, outpacing automobile accidents by a substantial margin. In fact, recent research has indicated that the rate of falls-related deaths is accelerating since the turn of the millennium (1).



Due to the potential for devastating physical injury, the economic costs of falls are substantial with over \$50 billion being spent on direct medical costs annually in the United States (2,3). This is in part due to falls resulting in over 3 million emergency room visits annually and over 500,000 bone fractures. Of perhaps even greater significance is the psychological and social effect that falls have on older adults, even if an injury is not sustained. Many older adults choose to avoid getting out and about and doing things they enjoy because they are worried about falling again. This leads to social isolation, depression, and loss of physical capacity. In fact, recent research

has indicated that older adults who have fallen report lowered balance confidence, less social involvement, and a more rapid decline in physical condition due to inactivity associated with fear of falling again. This fear of physical activity and loss of conditioning becomes a vicious cycle which puts the older adult at greater risk for falls going forward (4).

Intrinsic and Extrinsic Risk Factors for Falls

Falls in older adults became a subject of discussion in the 1980's when researchers identified falls as a public health crisis in the elderly and systematically identified over 160 independent risk factors that increase falls risk in older adults (5). And, since these were compiled before the rise of smart phones and other distracting technology, the number of fall risk factors today is likely much greater. These risk factors are divided into intrinsic (occurring within the body) and extrinsic (occurring outside of the body) categories and the risk for falls has been determined to increase linearly with the more risk factors that are present. Many older adults are exposed to multiple risk factors at any given point in time. For example, let's say Jim, a 79-year old man, is hypertensive and is on diuretic medication. Oftentimes this type of medication requires one or two nighttime visits to the bathroom and can cause postural hypotension (lightheadedness due to cardiovascular insufficiency with changes in body position). Now, let's say that Jim has a dog, Rover, who leaves his squeak toys around the house. In order to bathroom successfully, Jim would need to get out of bed, negotiate a dark house with Rover's toys scattered around, all while being lightheaded due to his medication side effects. This situation might not cause Jim to fall tonight, or tomorrow night, but chances are good that he will fall at some

point in the future. See Table 1 for a list of common intrinsic and extrinsic risk factors for falls.

Table 1. Risk factors for falls.

Intrinsic Risk Factors	Extrinsic Risk Factors
Medical Conditions	Outdoor Weather Conditions
Sensory Impairments	Built Environment (e.g., busy traffic, uneven sidewalks)
Polypharmacy (Overmedication)	Inadequate Lighting
Multitasking/Distracted Focus	Household Clutter/Obstacles
History of Falling	Lack of Adaptive Devices (e.g., grab bars, railings, non-slip surfaces)
Poor Physical Conditioning	Inappropriate Footwear/Clothing

Given that most older adults have more than one intrinsic risk factor present and environmental conditions are often unpredictable, it is clear that the issue of falls in older adults is not going to be solved any time soon. The list below provides some suggestions on how guide your older clients/patients to reduce the risk of falls from extrinsic factors:

1. Get up slowly and wait a moment before walking to reduce your likelihood of getting dizzy and losing balance
2. When outdoors, avoid walking on loose gravel, metallic/painted surfaces and cracked sidewalks and avoid being outdoors in bad weather (e.g., rain, sleet, snow)
3. Make sure that your path from the bedroom to the bathroom is free from obstructions (e.g., pet toys, rumpled rugs) prior to going to bed at night
4. Have enough light in all your rooms to be able to read normal newspaper print at arms-length

5. Never wear high heels outdoors - put them in a canvas tote bag and walk outside in sneakers or flats instead
6. Always have hand contact with railings when walking up or down stairs
7. Line the floor of the tub with textured adhesive strips, they are less likely to cause a slip or a trip than a rubber bath mat that might slip or bunch up

Intrinsic fall risk factors are more challenging to change because there aren't many "quick fixes" for these issues. The aging body undergoes substantial changes and deterioration (even with healthy aging) over the years that result in major decreases in sensory functions, neuromuscular function, and gait that negatively affect balance, both when moving (dynamic balance) and stationary (static balance). The following sections will describe these changes.