

## **FALLS** THE SUPERHERO WAY TO BEAT THEM!

JAVIER ROMERO MD

### **OBJECTIVES**

Review statistics of falls

**Complications of falls** 

**Reasons for falls** 

Test to measure the risk of falls

Strategies to prevent falls

# **FACTS:**

> 30 TO 40% OF PEOPLE OVER THE AGE OF <u>65</u> FALL EVERY YEAR

>INCREASE TO 50% FOR THOSE <u>80</u> AND OLDER



# **U.S. DATA**

AN ESTIMATED 29 MILLION FALLS WERE REPORTED per Year

> WITH HIGHER RATES OF FALLS AMONG THOSE WITH **MEDICAL CONDITIONS**

FALL INJURIES WERE REPORTED MORE COMMONLY IN WOMEN

### **ELDERLY IN LONG TERM CARE SETTINGS**



 50% of folks in long term care settings fall *yearly*

Of those who had a fall the year before, almost 60% will have another fall

# Complications

Complications from falls are the leading cause of death from injury in men and women older than 65 years.

Complications are also the 5<sup>th</sup> leading cause of death in older adults



<u>Broken</u> <u>Bones</u> <u>Brain</u> Injuries



<u>Major</u> <u>Cuts</u>

# About 5% of falls in people 65 years and older will lead to a stay in the hospital

# **Fall Injuries**

Studies also found that 5-10% of falls among older adults living in their homes result in:

> 50% of those who break a hip, Do Not recover full function status



### **REASONS FOR FALLS**

- Changes in posture with age
- Difficulty with balance
- Decline in stamina
- Vision problems

### **POSTURAL CONTROL**





It includes the: <u>Sensory System</u> <u>Muscular System</u>



The clinical approach to fall prevention in older persons requires knowledge of age-related changes that affect control of posture and staying upright and increase the risk of falls



### **SENSORY SYSTEMS**

THE ABILITY TO MAINTAIN THE UPRIGHT POSTURE IS DEPENDENT UPON SENSORY INPUT FROM SEVERAL SYSTEMS.

#### **DECLINES OCCUR WITH AGING:**

PROPRIOCEPTIVE
 SENSORS IN THE
 JOINTS OF THE LOWER
 EXTREMETIES LEAD
 TO AN INCREASE RISK
 OF FALLING

THE VESTIBULAR
 SYSTEM IN THE INNER
 EAR STARTS LOSING
 CELLS AND STARTS
 PROVIDING GOOD
 SENSE OF BALANCE



# **RISK FACTORS:**

#### LOWER EXTREMITY WEAKNESS

A review of 16 studies found that lowerextremity weakness increased the fall risk much more than the past history of prior falls

COGNITIVE IMPAIRMENT- DEMENTIA
 BALANCE PROBLEMS

age inflammation fat in



## RISK FACTORS CONTINUED:

PAST HISTORY OF A FALL
AGE
PSYCHOTROPIC DRUG USE
FEMALE GENDER
HISTORY OF STROKE
ORTHOSTATIC HYPOTENSION
DIZZINESS
ANEMIA





#### THIS THREAT MAY INVOLVE AN ACUTE ILLNESS:

- o FEVER
- o **DEHYDRATION**
- o ARRHYTHMIA
- NEW MEDICATION
- ENVIRONMENTAL STRESS- UNFAMILIAR SURROUNDING
- EVEN UNSAFE WALKING SURFACE

THE RISK OF FALLING GENERALLY INCREASES WITH THE NUMBER OF RISK FACTORS!

# **MUSCLE ACTIVATION AND COMPOSITION**

Some of the most striking postural control differences between young & old related to muscle activation patterns

- Older individuals tend to activate some muscles, such as the quadriceps, and less others in the leg, causing an imbalance and consequent fall
- Balance recovery during a postural disturbancetripping for example, is diminished due to low power of muscles of the lower extremity
- Age related loss of muscle – called
   <u>Sarcopenia</u>, and increased muscle fat are related to declining physical function and disability in older adults



Affects the mobility, the ability to maneuver and step over objects, and postural stability because of the tendency to avoid complete weight bearing on a painful joint.



Studies found is associated with a higher risk of falls and hip fractures. A study of 1,600 people ages 75 years and above, the risk fracture was twice as high when the score on the mini-mental status was suggestive of mild impairment (score 18-23) compared to those with no impairment.

Mini-mental status examination (MMS) is one of many ways to assess cognitive loss.



# Dementia & Alzheimer's

Increased awareness is needed for patients with Alzheimer's regarding safety at home, activities of daily living, wandering outside the house.

This is a situation that can increase the risk of falls!







### HOW DO MEDICATIONS AFFECT FALLS?

Medication use is one of the readily modifiable fall risks.



Multiple medications of any type and psyschotropic drugs like Opiods, Anxiety and sleep medications, in particular, are associated with increased falls





### **Patient Evaluation**

All older patients should be asked at least once yearly about falls

Further evaluation is indicated for patients who present with a fall or have a history of recurrent falls





### Patient Evaluation Continued....

Evaluations for fallers should include postural vitals signs, assessment of visual acuity, hearing, and muscle function.

Diagnostic testing may include a complete blood count (CBC), serum blood urea nitrogen (BUN) and creatinine, glucose level, and vitamin D.

#### Falls Risk Assessment and Evaluation for Patients with Increased Fall Risk:



<u>Musculoskeletal Function</u>—"Get Up and Go" test: The test is performed by observing the subject rising from a standard arm chair, walking a fixed distance across the room, turning around, walking back to the chair, and sitting back down. The timed part of the test records the mean time (in seconds) from initial getting up to re-setting.

#### THE "GET UP AND GO" TEST FOR GAIT ASSESSMENT IN OLDER ADULT PATIENTS

Have the patient sit in a straight-backed high-seat chair

#### Instructions for patients:

- Get up (without use of armrest, if possible)
- Stand still momentarily
- Walk forward 10 feet (3 meters)
- Turn Around and walk back to the chair
- Turn and be seated

#### Factors to Note:

- Sitting Balance
- Transfers from sitting to standing
- Pace and Stability of walking
- Ability to turn without staggering



#### **Modified Qualitative Scoring**

No Falls Risk: Well coordinated movements, without walking aid Low Fall Risk: Controlled, but Adjusted movements

Some Fall Risk: Uncoordinated Movements



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High Fall Risk:

Supervision Necessary Very High Fall Risk: Physical Support of stand by physical support necessary



#### TIMED "UP AND GO" TEST REFERENCE VALUES

Record time from initial rising to re-seating

#### Age (years) Mean Time in Seconds

60-69	8.1 (7.1 to 9.0)
70 to 79	9.2 (8.2 to 10.2)
80 to 99	11.3 (10.0 to 12.7)





## PREVENTING FALLS

**Exercise:** Exercise is one of the most consistently positive interventions to reduce the risk of falls and injuries. Thus, the initiation of exercise in older people who do not exercise and continuing exercise in those who do exercise would be beneficial.

For Individuals with a history of falling, we suggest an exercise program combining several categories of exercise for muscle strengthening and balances as part of a multidisciplinary program.



 Exercise interventions can be provided in a group or home-based setting. The variety of effective types of exercise provides options for older people, depending on their abilities and preferences.



## EXERCISE CONTINUED....

 Exercises that emphasize the balance in training with resistance training, are integrative like tai chi (incorporating elements of balance, strength and movement), and are progressive in their intensity are most effective. Exercise programs that involve at least 3 hours per week are associated with the greatest effects. The following types of exercise have been shown to be effective in decreasing the risk of falls in randomized trials and systematic reviews

- Gait and Balance Training
- >Strength Training
- Movement : Tai Chi or Dance
- Martial Arts

Tai chi and non-contact martial arts, which contain elements of strength & balance training, was effective in several trials and systematic ways.



## **Choices of Exercise:**

Choice of exercises can be guided by clinician and patient preferences. Physical therapists are most qualified to develop an exercise program tailored to their personal needs and limitations



### **Exercise Interventions**

Various exercise interventions have been shown to reduce falls. Examples of effective interventions include integration of balance and strength training into everyday home activities (functional exercise), step training (training individuals how to correct, rapid, and well-directed steps to avoid falls), addition of virtual reality component with simulated obstacles and distractors to treadmill training, and physical therapist-directed home based strength and balance retraining after an initial fall



In some studies to date, exercise decreased the rate of falls by 23 percent and tai chi reduced the rate of falls and injurious falls at 12 months by approximately <u>50 percent</u>

