

# FROM FRAIL TO FUNCTION TO FUN

**Section on Geriatrics**

**American Physical Therapy Association**



# OBJECTIVES

- **Identify myths, stereotypes, and barriers associated with physical activity participation**
- **Distinguish the differences between natural age-associated changes and inactivity**



# OBJECTIVES

- **Begin or continue a safe and effective exercise program**
- **Seek appropriate consultation for an exercise prescription**



# MYTHS, STEREOTYPES, AND BARRIERS ASSOCIATED WITH EXERCISE



# CHRONIC DISEASE

23% of deaths from leading chronic diseases are from sedentary lifestyles

## Inactivity

- Osteoarthritis
- CAD
- CHF
- COPD
- Stroke
- PVD
- Diabetes

## Inactivity

- Depression
- Osteoporosis
- Sarcopenia

## Others

- Parkinsons
- RA



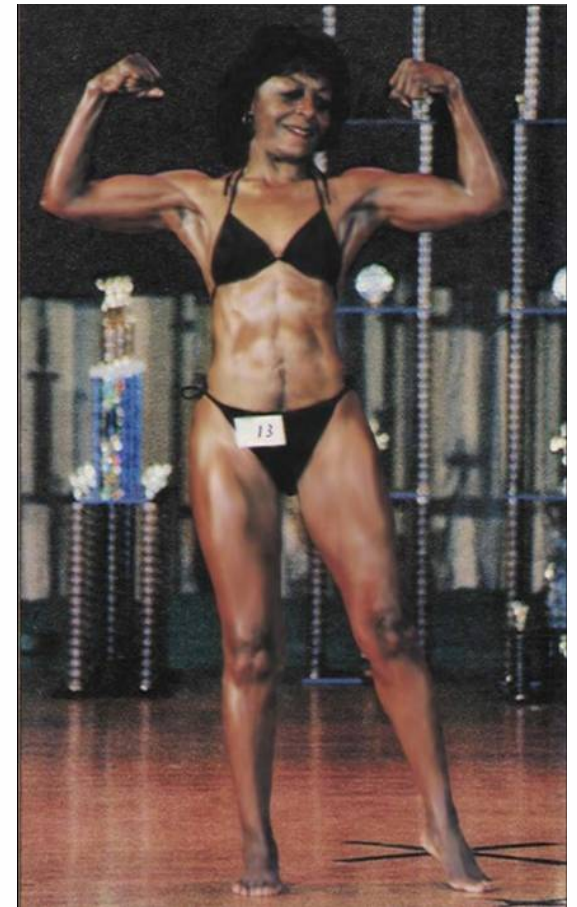
# MYTHS, STEREOTYPES, BARRIERS



- **Negative consequences of aging are inevitable**
- **High intensity exercise is not for older adults**
- **Older adults cannot get stronger or faster**
- **Strength training will injure older adults**

# MYTHS, STEREOTYPES, BARRIERS

- Fear of injury
- Fear of falling
- Not knowing what to do to get started
- Not having a place to exercise
- No experience with exercise
- Takes too much time
- Exercise causes incontinence
- Exercise has to be a formal activity



# Differentiate normal aging from changes that occur due to inactivity

**Cardiovascular/pulmonary**  
**Musculoskeletal**  
**Neuromuscular**

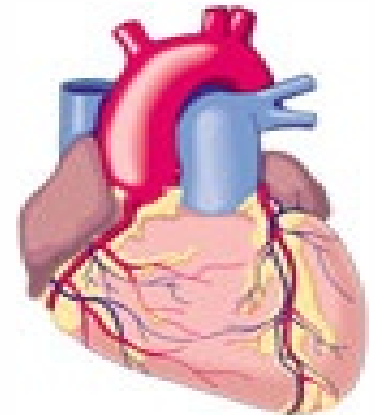




# CARDIOVASCULAR CHANGES

Resting heart rate does not change but if inactive, resting HR likely to increase

Endurance does go down (e.g., harder to climb mountains) but capability to do normal everyday activities should not change unless inactive.



# PULMONARY CHANGES



**You will have less  
“wind” with age  
but change is not  
noticeable unless  
you are inactive**

# MUSCULOSKELETAL CHANGES

- ↓ **Skeletal muscle mass**  
(sarcopenia)
- ↓ **Strength**

The loss in mass and strength is **MUCH** greater if muscles are inactive



# MUSCULOSKELETAL CHANGES

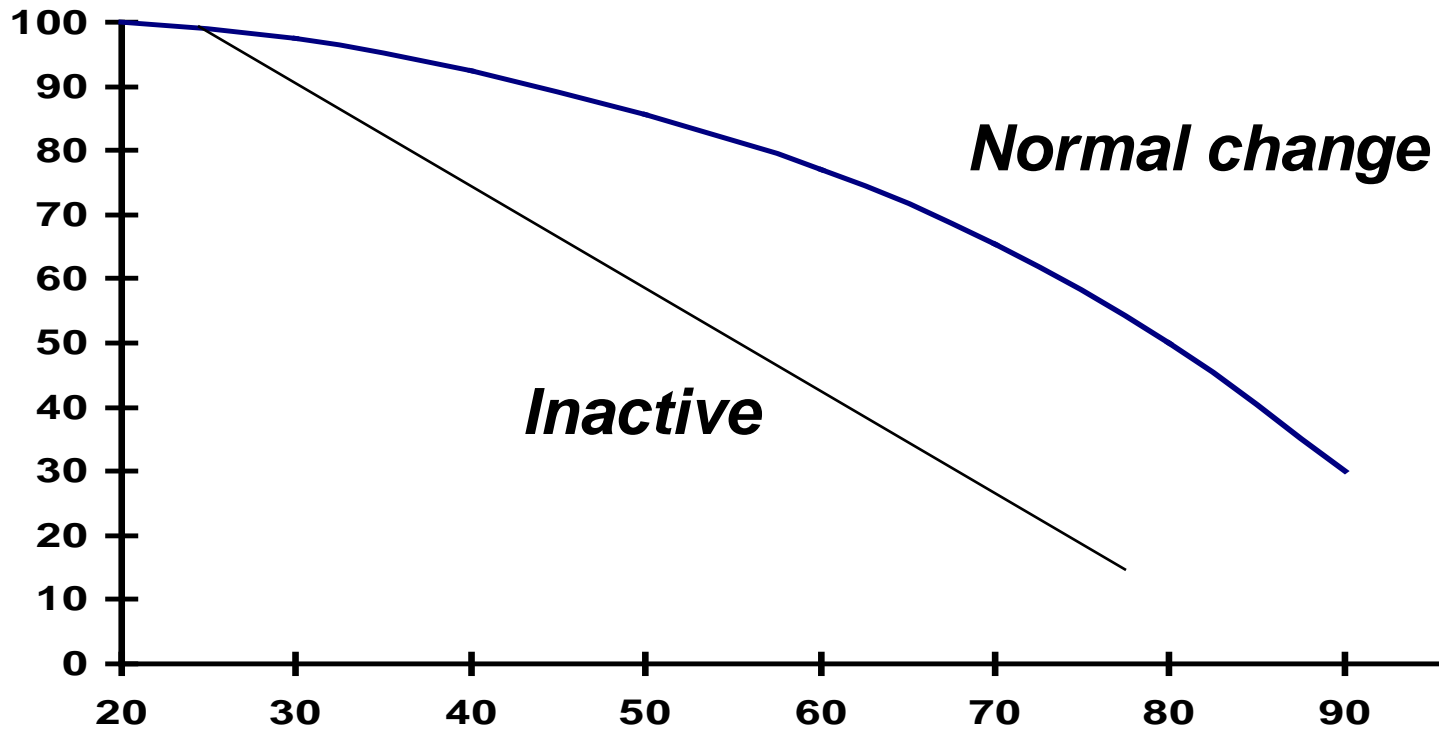
- ↓ Muscle mass leads to decreased endurance
- ↓ Flexibility
- ↓ Bone mineral density

Although bone mineral content goes down with age, osteoporosis is **NOT** normal aging

Inactivity results in even more muscle and bone loss



# MUSCLE STRENGTH DECREASE



# MUSCULOSKELETAL CHANGES

↑ **Body fat**  
**(BMI)**

**Body fat increases**  
**are greater with**  
**inactivity**

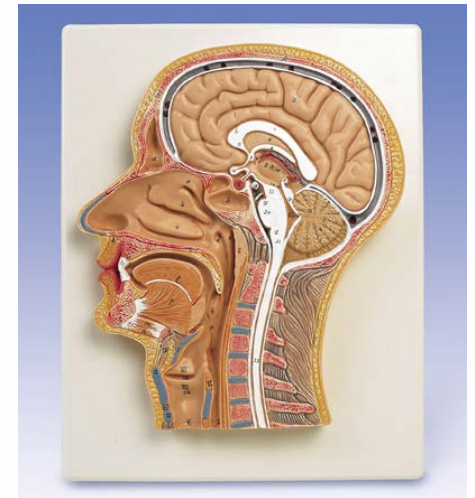


# NEUROMUSCULAR CHANGES

## Decreases

- ↓ Reaction time
- ↓ Cognitive processing speed, accuracy
- ↓ Attention span
- ↓ Walking speed

Many of these changes are improved with exercise



# FUNCTIONAL REQUIREMENTS FOR COMMUNITY-LIVING OLDER ADULTS

- 1000 feet required to complete an errand in the community 3x
- Turning around
- Negotiating floor/surface transitions
- Gait speed of 3 miles/hour
- Need to carry an average of 7 lb package





# OLDER ADULTS and FITNESS

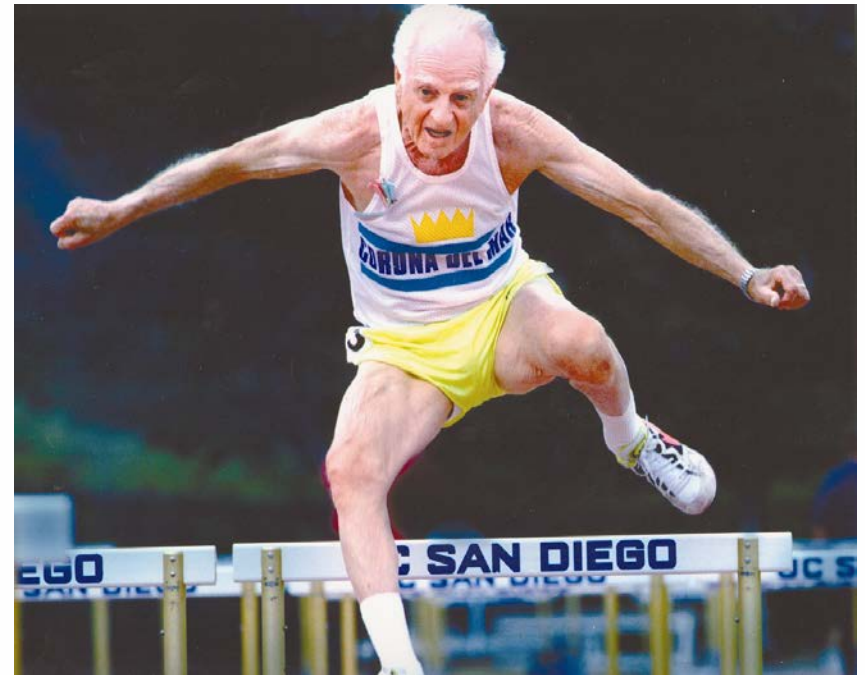
- Of community dwelling older adults over 75:
  - 16% could not lift 10 pounds
  - 21% could not walk up 10 steps without stopping
  - 29% could not walk 1300 feet
  - 28% could not stoop, crouch, and kneel

(Vital & Health Statistics National Health Interview Survey 2002  
[www.cdc.gov/nchs/nhis.htm](http://www.cdc.gov/nchs/nhis.htm))



# The good news is..

**All of these  
changes can be  
improved with  
exercise!!!!**



# RESPONSES TO EXERCISE

## Quality of Life/Functional Abilities

- Regular exercise maintains independence, and improves quality of life
- Functional decline can be retarded



# RESPONSES TO EXERCISE



**Quality of life and function (through strength, endurance, and balance training) may be ↑ at any age as long as the intensity, duration, and frequency are sufficient to consistently overload the system**

# TYPES of EXERCISE

- **Aerobic/Endurance**
  - **Balance**
  - **Flexibility**
- **Strengthening/Resistance**



# Aerobic Exercises

- **Walking, brisk walking, mall walking, treadmill**
- **Elliptical trainer**
- **Exercise bicycle (regular, stationary, recumbent, upper arm ergometer)**
- **Swimming/water aerobics**
- **Steppers**
- **Jump rope**



# How much and how long?

- **Ideally, aerobic exercise should be at least 20-40 minutes long**
  - Cumulative or continuous
- **Minimum 3x/week**
- **Intensity: should breathe hard but still be able to talk**



# STRENGTHENING EXERCISE

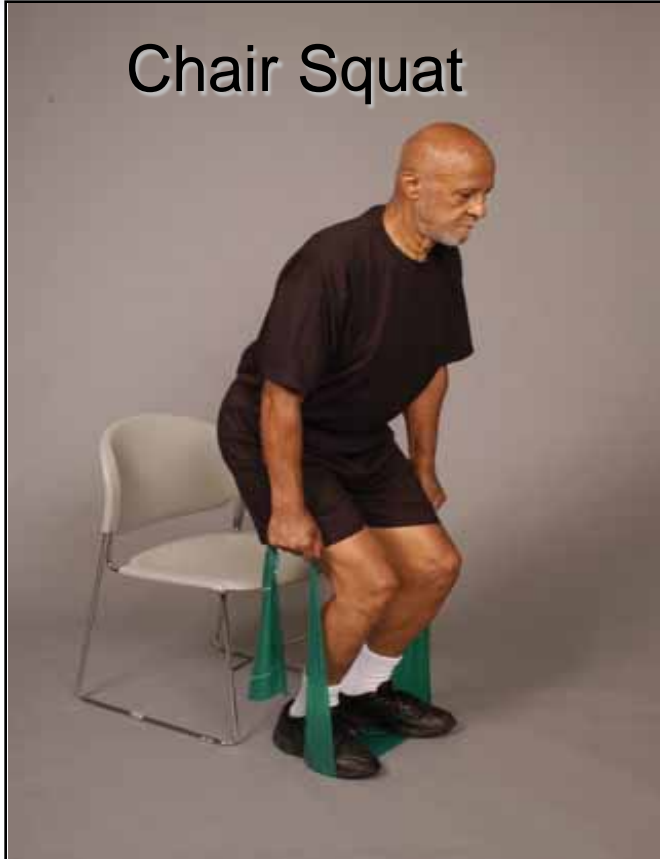
- Requires resistance and should include upper body, lower body and trunk
  - Weights or a heavy object to lift
  - Body weight
  - Elastic bands or tubing
- Should be done 2-3x/week on non-consecutive days
- 8-12 repetitions
- Last repetition you do should feel like the last repetition you can do





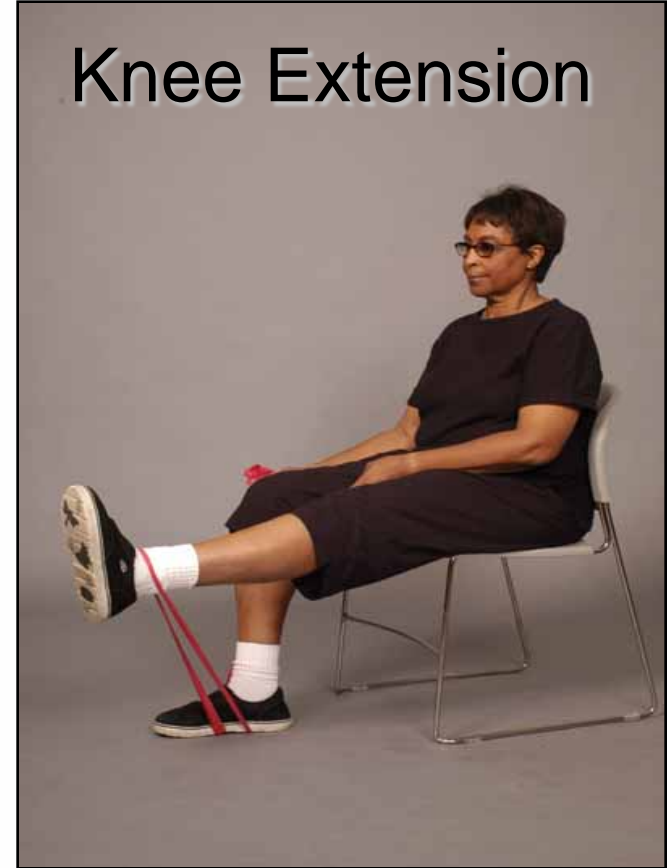
# GAIT, MOBILITY, BALANCE

Chair Squat



Quads, hamstrings, gluts

Knee Extension



Quads

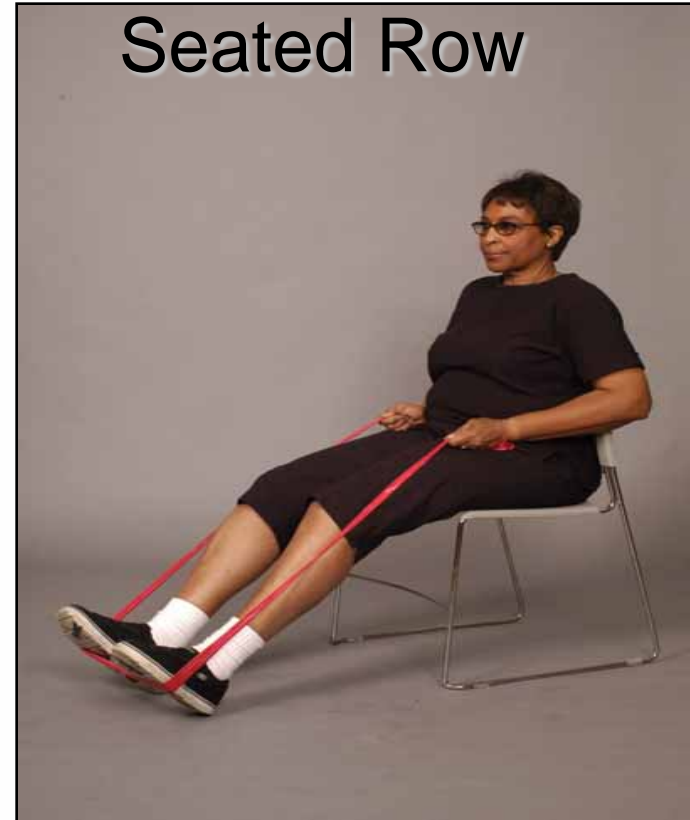
# CARRYING, LIFTING, PULLING

Chest Press



Pectorals, Ant Deltoid

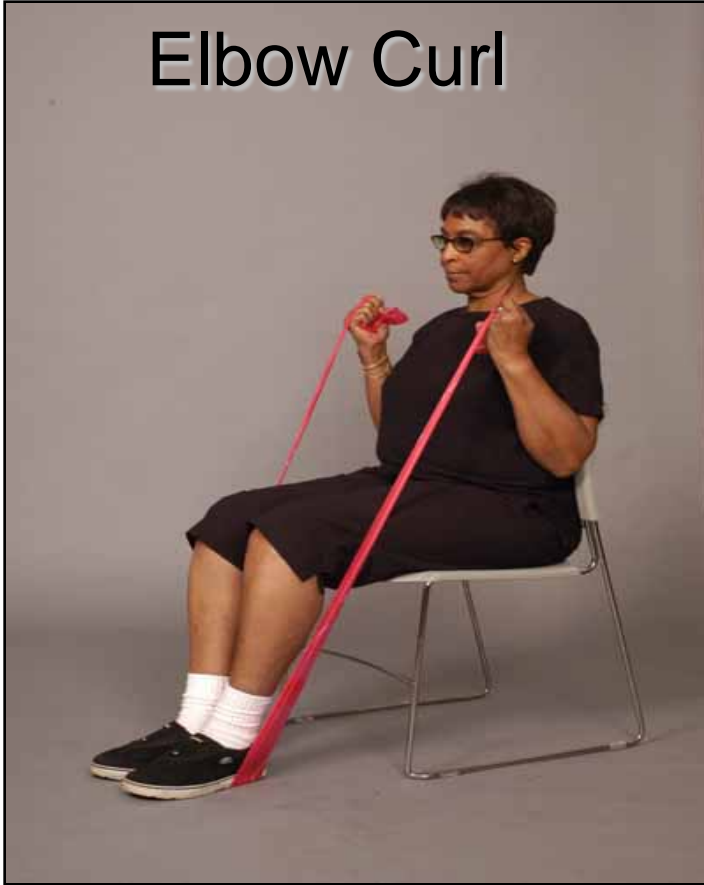
Seated Row



Scapular Stabilizers

# CARRYING, LIFTING, PULLING

## Elbow Curl



Biceps

## Elbow Extension



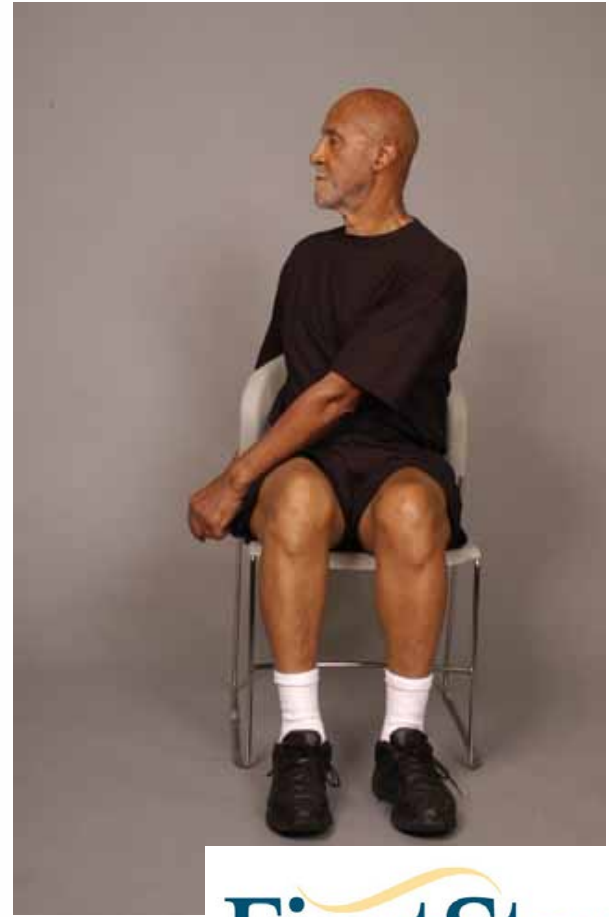
Triceps

# FLEXIBILITY

- **Flexibility is stretching**
- **Hold each stretch for 30-60s**
- **Do each stretch 3-4x**
- **You should feel a little uncomfortable but no pain**
- **Do not bounce!**
- **What to stretch: shoulders, chest, calves, hamstrings, hips**



# FLEXIBILITY ACTIVITIES



# FLEXIBILITY ACTIVITIES



# BALANCE EXERCISES

- **Balance exercises move you outside your comfort zone**
- **Activities may include**
  - **Narrowing your base of support**
  - **One legged stand**
  - **Standing and moving your head side to side**
  - **Standing with eyes closed**
  - **Standing on uneven surfaces**
- **Do once a day for a minute**
- **Progress to 5 minutes**



# STATIC BALANCE: FIRM



Tandem



Unilateral



# STATIC BALANCE; FOAM



Bilateral → Unilateral

*Exercise Photos Courtesy of*

# DYNAMIC BALANCE



Kick



Hip Abduction



Hip Flexion



Knee Flexion

# Seek appropriate consultation for an exercise prescription

**Who to see? A Physical Therapist (PT)**

**Why? Because PTs have more knowledge and skill for developing an exercise program for aging adults than MD, exercise physiologist, personal trainer**



# What to expect from your PT

- A review of your medical history
- An evaluation of your capabilities
  - Aerobic
  - Strength
  - Balance
  - Flexibility
- Instruction in how to perform an individualized exercise program



# Who to contact?

- For help in getting started, contact the American Physical Therapy Association
- 1-800-999-APTA
- Refer to the “Find a PT” website of the APTA. [www.apta.org](http://www.apta.org)
- [www.FirstStepToActiveHealth.com](http://www.FirstStepToActiveHealth.com)

