Fit for Over Fifty
Beginning a Cardiorespiratory Exercise Program

Thorndike’s Law of Effect

When a favorable consequence follows a behavior, then the behavior is reinforced. The reverse is also true.

Five Healthy Behaviors

1. 30+ minutes of PA
2. Normal BMI/WHR
3. Healthy Diet
4. Not Smoking
5. ½-2 drinks of alcohol/day
   (lower amount for women and smaller men)

Exercise Behavior

- Exercise Dropouts
  - (9% - 87%; Mean = 45%)
  - Dropout rate high in first 3 months of exercise,
    - Increases approx 50% within 1 year
  - Most commonly within first 2-3 weeks of program
    - Effects of EX program generally not seen until 3-6 weeks

Change Behaviors (ACSM Fig. 7.4)

- Pre-contemplation
- Contemplation
- Preparation
- Action
- Maintenance

Improving Exercise Behaviors

- Pre-Contemplation
  - Begin to think about initiating change; may lack interest
  - Consider pros and cons of change
  - Must use multiple resources to stress importance of desired change
    - Written Materials
    - Educational Classes
    - MD/Family Persuasion
Improving Exercise Behaviors (ACSM Fig. 7.4)

- **Contemplation**
  - Begin “thinking” about desired change; **weigh pros and cons**
  - Can be influenced by **defining risks and benefits** of making or not making the change
    - Set realistic goals about steps needed to take (triage)
    - Identify support system

- **Preparation**
  - Doing some physical activity but not meeting recommended criteria
    - 20 minutes - Mod intensity 5 days/week
    - 20 minutes - Vigorous intensity 3-5 days/week
  - Can be influenced by defining risks and benefits of making or not making the change
  - Identify barriers and obstacles and create a plan to overcome

- **Action**
  - Exercising regularly at set intensity, but **not yet maintained 6 months**
  - Anticipate high-risk situation; **formulate** relapse prevention strategy
  - Find way to **add in variety to keep interest and decrease injury**

- **Maintenance**
  - Meeting referenced criteria (exercising regularly at set intensity) for at least **six months**
  - Prepare for **relapse**
  - Increased enjoyment with new habit
  - Remind of positive benefits of change

**Readiness for Change Important!!**

- Determines **potential for achieving successful behavior change**
- Movement through stages **not linear nor orderly**
- Individuals **spend variable amounts** of time at each stage
- **Cycling** back and forth between early stages **common**

**Can YOU be Fit Over 50??**

- **By 2030, 70 million people over the age of 65**
- **Some are “athletes”**
  - 18 – 100 years of age
    - Majority >35 years of age
- **MOST just want good health**
**Aging and Exercise**
- Aging accounts for only ½ of functional decline between ages of 30-70 years
- Many physiological changes associated with aging can be slowed with implementation of regular exercise
- Regular moderate to vigorous physical activity will yield physiological improvements regardless of age

**Pre-Participation & Safety**
- Par-Q, AHA/ACSM Screening, Risk Stratification (ParQ Form in Session Packet)
- Heavier or more intense Exercise
  - Get Physical Examination and share info
    - Level of involvement and intensity
    - Underlying health conditions
    - Medications
  - Laboratory and Special Tests
  - Body Composition, Orthopedic Exam, ECG/Stress Test

**Response to Exercise**
- Healthy older exercisers respond similarly to strength and endurance overload as do younger
  - HOWEVER, overload training for aging athletes MUST be introduced more gradually in early stages of training

**General Benefits of Exercise in Over 50 Crowd**
- Reduce premature mortality from CVD, diabetes, and cancer
- Slows age-associated decline in metabolism
- Enhances aerobic capacity creating better ability to combat obesity
- Correlates with longevity and improved physical/mental well-being
- Reduces age-related bone loss

**General Benefits of Exercise in Over 50 Crowd**
- Increases muscle mass
- Improves muscular strength and neuromuscular coordination
- Assist in limiting bone re-absorption
- Improves function
- Reduces the risk of falling
  - Cost-Benefit Ratio

**General Benefits of Exercise in Over 50 Crowd**
- Improves duration of strenuous and aerobic activity
- Reduces heart rate and lactate production
- Decreases perceived exertion as defined by VO2
Muscles and Aging
- Muscle mass decreases 15-30% by the age of 80
  - Majority of loss in fast-reacting muscle
  - 40% decrease in total muscle size
- Muscle mass loss associated with loss of mechanical function
- Loss of tendon flexibility and muscular stiffness

Muscular Injury in Aging EXers
- No more prone to injury than younger EXers who train a comparable amount
  - However, damaged more easily with loading than is younger skeletal muscle.
  - THEREFORE, Over 50 EXers more susceptible to muscular injuries and soreness after exercise

Recovery from Injury
- Over 50 EXers experience symptoms resulting in longer athletic disability than younger; therefore, appear to require longer recover time
  - Healing time does not differ between overuse and acute sport-related injuries in Over 50 EXers

Management of Injuries
- All injuries should be treated promptly
  - Injuries that normally have little impact on sedentary aging individuals could cause considerable debilitation in senior athlete
  - Surgery is always LAST resort

Changes in Cardiopulmonary Function due to Aging
- Decreased aerobic abilities
- Decreased lung functions
- Lung work harder to perfuse O2 in blood
- Increased vascular stiffness
- Adverse changes in heart muscle and function

Changes in Cardiopulmonary Function due to Aging
- Decline in maximal attainable heart rate
- Limitation in cardiac output and maximum aerobic capacity
- Increased risk of heart disease
## AHA Guidelines for Participation Considerations for Cardiac Conditions

## Getting ready to Exercise
- **Identify what you will do**
- **Begin with one activity, and then add a new one each month**
- **Block your schedule for EX**
- **Find your focus**
  - Individual or group activities
  - Quiet, music, distractions
- **Wear appropriate footwear**
- **Wear comfortable clothing**

## Choosing the right Exercise Program for YOU
- **Suzanne Brue’s – The 8 Colors of Fitness**, DelrayBeach, FL: Oakledge Press. 2008
  - Uses Myers-Briggs Type Indicator to identify exercise styles/preferences
  - Self-Assessment and Recommendations
  - Allows you to individualize EX programs

## Safety Considerations for EXers
- **Maintain hydration**
- **Do not exceed maximum heart rate**
- **Ignore the thought of “no pain, no gain”**
  - Discomfort (*NOT pain*) may be experienced
  - If it hurts, stop or decrease intensity/work
- **Get basic instruction on proper techniques**
- **Be patient…it takes 3-6 weeks before you will start to see real differences in health**

## Other Safety Considerations
- **Warm-Up and Cool Down** same requirements as for younger exercisers
- More emphasis on gradualness of warm-up and cool down
- Special attention to starting levels of fitness and gradualness
  - ≤ 10% increase in volume/intensity/week
- **Knowledge** of appropriate equipment and technique

## Before all Exercise
- **Warm-Up**
  - Get the heart and muscles ready to work
  - Gentle rhythmic movements of muscles to be worked
  - Build up intensity of activity slowly
- **Cool Down**
  - After exercise, allow muscles and heart to recover slowly
  - Walk, slow activity; decrease intensity
  - Gently stretch all muscles used
Know your Heart Rates

- **Maximum Heart Rate (220-Age)**
  - Rate that should not be exceeded during exercise as may overstress heart muscle
  - \( 220 - \text{Age} = \text{Maximum rate heart should beat during EX} \)

- **Target Heart Rate**
  - Will vary based upon exercise goals
  - Involves % of Maximum Heart Rate (MaxHR)
  - Checked periodically during EX
    - Perceived Exertion levels
    - Heart rate monitors

Heart Rate & Exercise Intensity

- **Karvonen Formula (Heart Rate Reserve)**
  - Max HR = 220 - Age
  - Target Heart Rate
    - \([\text{Max HR} - \text{Resting HR}] \times \% \text{ intensity} + \text{Resting HR} = \text{HRR} \)
  - Cooper Formula (% HR Max)
    - Predicted Max HR
      - \((W) = 220 - \text{Age}; (M) = 205 - \frac{1}{2} \text{ Age} \)
    - THR = Predicted MaxHR \times \% \text{ Intensity}

Finding your Heart Rate

- **Taking a Pulse**
  - Carotid Artery
  - Radial Artery

Exercise is Medicine™ - Starting an EX Program

- **Health adults <65yo w no chronic disease or condition**
  - Set time each day to EX
  - Choose enjoyable CV activities
  - Start w 10-15 min day; add 5 min each week until achieve min 30 min 5x/wk
  - Incorporate strength training 2x/week
    - 8-10 EX; 8-12 reps


Exercise is Medicine™ - Starting an EX Program

- **Healthy adults 50-64 yo w chronic disease or condition**
  - Same as norms
  - If risk of falls, add balance EX
  - Seek guidance from EX profession is unsure
  - Have physical activity plan

2008 Physical Activity Guidelines for Americans

- **150 min moderate physical activity/week**
  - Hard enough to elevate HR and break sweat, yet still be able to carry on conversation (RPE ~7/10)
  - Include CV and strength workouts

- **Special EX RX guidelines** – www.exerciseismedicine.org/YourPrescription.htm
## Exercise Dosage – Standardization of Terms

- **Activity Dosing** – \( \geq 10 \) minute doses
  - **Vigorous Intensity Activities**
    - (>6.0 MET or greater)
    - Activity exemplified by jogging and causes rapid breathing and a substantial increase in heart rate
    - 3 days/week for 20 min/event
  - **Moderate Intensity Activities**
    - (3.0 to 6.0 MET)
    - 5 days/week for 30 min/event

## Guidelines for Cardiorespiratory Exercises

- **Same safety considerations** as with younger athletes
- **Exercise at 70-80% MaxHR or 60-80% of HRR for 20-30 minutes**
  - Begin workouts 3 exercise sessions (15-20 minutes)/week @ 40-50% HRR
  - If NEVER exercised before, begin at less than 10 mins of light intensity aerobic EX (e.g., walking)
  - **Increase duration** rather than intensity of exercise
  - **Emphasize Endurance EX** - should occur 3-5 sessions/week

## Guidelines for Cardiorespiratory Exercise

- **Rate of progression important**
  - Influenced by functional capacity, medical/health status, age, activity preferences/goals, and individual tolerance
  - **Combined upper-lower body exercises** preferred over upper body or lower body alone
  - Avoid hand weights until able to EX comfortably
  - **Use variety of activities** to decrease chronic/overuse injuries

## Maintenance of Aerobic Fitness

### Frequency
- Aerobic EX missed periodically or if training reduced for up to 15 weeks..
  - Not an excuse to stop EX

## Physical Activity Goals for Cardiorespiratory Fitness

- **Duration**
  - 20-60 minutes of continuous aerobic EX
    - Duration depends on intensity of activity
    - Lower intensity requires longer durations
    - ACSM/CDC Recommendation = 30 minutes

- **Mode of Activity**
  - Activity should use large muscle groups maintained continuously and rhythmically
### Program Stage

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#### Closing Thoughts....

- Rate of conditioning should be personalized
- Adjust workouts using changes in intensity and duration.
- Your most significant advances will be observed during first 6-8 weeks

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Thank you!

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