Aging and Exercise
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Exercise Definition

- Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure.

- Exercise is a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness.
Types of Exercise

- Cardiovascular
  - Trains the heart and lungs a.k.a. aerobic

- Strength training
  - Trains the musculoskeletal system a.k.a. “anaerobic”

- Skill
  - balance/coordination/agility
Effects of Aging

Loss of muscle mass and function
Loss of independence/lifestyle
Impaired Balance
Reduced Agility
Lower BMI
Diminished Exercise Capacity
Depression
Memory loss
Aging Muscles

Muscle Atrophy- We lose cell in numbers and size as the cells shrink

Tendons and cartilage lose water; become stiffer and less able to tolerate stress.

The heart muscle is less effective. We tire more quickly and take longer to recover

Handgrip strength decreases causing loss of ADLs

The body's metabolic rate slows due to lower muscle mass.
Aging Bones

Bone mineral is reabsorbed and we lose bone tissue. They become less dense and more fragile.

Crush fractures of the vertebrae, resulting in a "dowager's hump."

Osteoporosis is also responsible for almost all hip fractures in older men and women.

As cartilage degenerates, arthritis can develop. Joint motion is restricted and inflamed
Benefits of Exercise

Increased muscle mass

Improved mobility/independence/function

Improved balance/lower risk of falls

Increased BMR/ faster metabolism

Improved endurance

Improved mood

Improved cognitive function

Reduced BP/cholesterol, risk of chronic illness
Barriers to Exercise

• No Time
• No Access Equipment
• Pain/Disability
• Fear/Anxiety
Barriers to Exercise

• No Time
  • Pay yourself First

• No Access Equipment
  • Don’t Need it

• Pain/Disability
  • Adaptive exercise

• Inexperience/Fear/Anxiety
  • Education
Keys to Exercise Success

Do something you ENJOY!

Find a partner or group for accountability, motivation and support

Keep a regular schedule

Set SMART goals

Reward yourself

Online applications

Use a pedometer or other measure of feedback
Make SMART Goals

- **Specific**- Who, where, how
- **Measurable**- Objective
- **Achievable**- Can it be done
- **Relevant**- Why do you want to reach this goal
- **Time Bound**- Set an end date
Recommendations for Older Athletes

WHO

To Maintain

- At least 150 minutes of moderate-intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination

- Bouts of at least 10 minutes duration
Recommendations for Older Athletes

WHO

To Improve

• At least 300 minutes of moderate-intensity physical activity per week, or 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination

• Bouts of at least 10 minutes duration
Recommendations for Older Athletes

WHO

- People with poor mobility, should perform physical activity to enhance balance and prevent falls on 3 or more days per week.

- Muscle-strengthening activities, involving major muscle groups, should be done on 2 or more days a week.

- When older adults cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.
What is the BEST exercise?
Establishing a Program

Where do I start?
What is moderate?

METs
- 3 METs Moderate
- 6 METs Vigorous

Heart Rate/Pulse
HR Max 220-age. NOT our exercise range
- 50-70% HR Max Moderate
- 70-80% HR Max Vigorous

Self Monitoring
- RPE Scale
- “Talk/Sing” Test
Establishing a Program

Where do I start?
What is moderate?

**Examples of Moderate Intensity:**
- Walking briskly 3MPH
- Water aerobics
- Bicycling less than 10 MPH
- Doubles tennis
- Ballroom dancing
- General gardening

**Examples of Vigorous Intensity:**
- Race walking, jogging, or running
- Swimming laps
- Singles tennis
- Aerobic dancing
- Fast bicycling >10 MPH
- Jumping rope
- Heavy gardening
- Hiking uphill or with a heavy backpack
Are You A METs Fan?

<table>
<thead>
<tr>
<th>Physical activity</th>
<th>MET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light intensity activities</strong></td>
<td></td>
</tr>
<tr>
<td>sleeping</td>
<td>0.9</td>
</tr>
<tr>
<td>watching television</td>
<td>1.0</td>
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<tr>
<td>writing, desk work, typing</td>
<td>1.8</td>
</tr>
<tr>
<td>walking, 1.7 mph (2.7 km/h), level ground, strolling, very slow</td>
<td>2.3</td>
</tr>
<tr>
<td>walking, 2.5 mph (4 km/h)</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Moderate intensity activities</strong></td>
<td></td>
</tr>
<tr>
<td>bicycling, stationary, 50 watts, very light effort</td>
<td>3.0</td>
</tr>
<tr>
<td>walking 3.0 mph (4.8 km/h)</td>
<td>3.3</td>
</tr>
<tr>
<td>calisthenics, home exercise, light or moderate effort, general</td>
<td>3.5</td>
</tr>
<tr>
<td>walking 3.4 mph (5.5 km/h)</td>
<td>3.6</td>
</tr>
<tr>
<td>bicycling, &lt;10 mph (16 km/h), leisure, to work or for pleasure</td>
<td>4.0</td>
</tr>
<tr>
<td>bicycling, stationary, 100 watts, light effort</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Vigorous intensity activities</strong></td>
<td></td>
</tr>
<tr>
<td>jogging, general</td>
<td>7.0</td>
</tr>
<tr>
<td>calisthenics (e.g. pushups, situps, pullups, jumping jacks), heavy, vigorous effort</td>
<td>8.0</td>
</tr>
<tr>
<td>running jogging, in place</td>
<td>8.0</td>
</tr>
<tr>
<td>rope jumping</td>
<td>10.0</td>
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</table>
# Rating of Perceived Exertion

**Borg RPE Scale**

<table>
<thead>
<tr>
<th>RPE</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Very, very light</td>
<td>How you feel when lying in bed or sitting in a chair relaxed. Little or no effort.</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>Very light</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Fairly light</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Somewhat hard</td>
<td>Target range: How you should feel with exercise or activity.</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Hard</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Very hard</td>
<td>How you felt with the hardest work you have ever done.</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Very, very hard</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Maximum exertion</td>
<td>Don’t work this hard!</td>
</tr>
</tbody>
</table>
Establishing a Program
Where do I start?

Resistance Training Guidelines

8-12 repetitions (reps) for power
10-15 reps to for strength in older persons starting exercise
15-20 repetitions improve muscular endurance

Total 30 min 2 non-consecutive days/week
Establishing a Program

Where do I start?

Resistance Training Guidelines

3 seconds to lift - 1 second hold - 3 seconds to return

Exhale with exertion

Don't hold your breath

Use smooth, steady movements
Establishing a Program
Where do I start?

Resistance Training Guidelines
To Build Strength

Start out with a weight you can lift only 8 times. Use that weight until you can lift it easily 10 to 15 times.
When you can do 2 sets of 10 to 15 repetitions easily, add more weight so that, again, you can lift it only 8 times. Repeat until you reach your goal.
Walking/Running

Recommend 30 min or more walk, run, or combination

Addresses Cardiovascular/ Aerobic component of Exercise

- Weight bearing
  - Available
  - Adaptable
  - Simple
  - Free
Proper Footwear
Walking or Running Shoes

- Straight last
- Semi-curved last
- Curved last
Footwear Tips

Shoe fits foot
Form fits function
Size matters
Walk in them
Try both shoes on
Buy shoes later in the day
Wear well-worn shoes to the store
Spend the money—at least the first time
Replace every 300-500 miles or 6 months
Newsworthy Athletes

YOU?
Thank You!