PHYSICAL ACTIVITY IN OLDER ADULTS

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INTRODUCTION

Despite the benefits of being physically active, approximately one in four adults aged ≥50 years are inactive\(^1\). Providers have the ability to play a unique role in guiding and motivating these patients.

\(^{1}\text{CDC Morbidity and Mortality Weekly Report, 2016}\)
The 2018 Physical Activity Guidelines for Americans recommends all adults, including older adults, get at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity aerobic physical activity weekly.

Older adults who cannot achieve this because of chronic conditions should be as physically active as their abilities and conditions allow.²

Exercise intensity is often expressed in metabolic equivalent of task (MET) units.2

<table>
<thead>
<tr>
<th>Intensity</th>
<th>METs</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>&lt;3</td>
<td>Casual walking, stretching, light housework</td>
</tr>
<tr>
<td>Moderate</td>
<td>3 – 5.9</td>
<td>Brisk walking (2.5 – 4.0 mph), gardening, water aerobics</td>
</tr>
<tr>
<td>Vigorous</td>
<td>≥6</td>
<td>Jogging or running, carrying heavy groceries, fitness class, heavy gardening</td>
</tr>
</tbody>
</table>
BENEFITS OF EXERCISE IN OLDER ADULTS

- Regular physical activity has many benefits including lower mortality, risk of cardiovascular disease mortality, improved quality of life, reduced anxiety and depression, and lower risk of falls.\(^3\)
- A study of 12,201 men aged 65-83 showed active men had a lower HR of death over the 10-13 year study period.\(^4\)


### Table 2
Clinical outcomes of older men according to their level of physical activity

<table>
<thead>
<tr>
<th>Clinical outcomes at the follow-up assessment</th>
<th>Physically Inactive (n=2535)</th>
<th>Physically active (n=741)</th>
<th>Risk ratio*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>168 (7.6)</td>
<td>36 (5.4)</td>
<td>0.71</td>
<td>0.50 to 0.91</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>730 (33.0)</td>
<td>190 (25.4)</td>
<td>0.86</td>
<td>0.75 to 0.98</td>
</tr>
<tr>
<td>Impaired IADL</td>
<td>1460 (57.6)</td>
<td>349 (47.1)</td>
<td>0.82</td>
<td>0.75 to 0.89</td>
</tr>
<tr>
<td>Impaired ADL</td>
<td>958 (37.8)</td>
<td>220 (29.7)</td>
<td>0.79</td>
<td>0.70 to 0.89</td>
</tr>
<tr>
<td>No mood, cognitive or functional impairment*</td>
<td>680 (26.8)</td>
<td>259 (34.9)</td>
<td>1.30</td>
<td>1.16 to 1.47</td>
</tr>
</tbody>
</table>
Furthermore, studies show that any amount of physical activity can result in health benefit, and that it is never too late to become physically active.

- Study in JAMA IM of 1861 people aged 70-88 showed “becoming active during old age is also beneficial, even among previously sedentary people.”

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COUNSELING STATISTICS

- A study of primary care physicians showed that physicians often are unable to counsel their patients about physical activity.\(^8\)
- Of those who counseled, 50% report spending 2 minutes or less.
- Major barriers were inadequate time (61%), knowledge (16%), and patient compliance (11%).

ROLE OF PROVIDER

- Motivate Patients
- Pre-Exercise Evaluation
- Give Guidance
- Provide Resources
MOTIVATE PATIENTS

- Stages of Change model can be used to counsel patients about specific behavior changes.
- Take a few minutes out of the visit to use motivational interviewing:
  - “What do you think you would be change before our next visit?
  - “What activity would you most like to do if you start exercising?”

Source: Stages of Change Model
PRE-EXERCISE EVALUATION

• Because motivating people to be physically active is a significant challenge, preparticipation screening recommendations should not present unnecessary obstacles (ACSM, 2015).

• Although risk of acute cardiovascular event is transiently increased during vigorous exercise especially in sedentary individuals, the absolute risk remains extremely low.9,10

Evaluation Algorithm

Participants in Regular Exercise

No

No CV\(^2\), Metabolic\(^2\), or Renal Disease

AND

No Signs or Symptoms\(^{111}\)
Suggestive of CV\(^1\), Metabolic\(^1\), or Renal Disease

Medical Clearance\(^{111}\) Not Necessary

Light to Moderate** Intensity Exercise Recommended

May Gradually Progress to Vigorous*** Intensity Exercise Following ACSM Guidelines\(^6\)

Following Medical Clearance, Light* to Moderate** Intensity Exercise Recommended

May Gradually Progress as Tolerated Following ACSM Guidelines\(^6\)

Yes

No CV\(^2\), Metabolic\(^2\), or Renal Disease

AND

Any Signs or Symptoms\(^{111}\)
Suggestive of CV\(^1\), Metabolic\(^1\), or Renal Disease

Medical Clearance\(^{111}\) Recommended

Follow Medical Clearance, Light* to Moderate** Intensity Exercise Recommended

May Gradually Progress as Tolerated Following ACSM Guidelines\(^6\)

Known CV\(^2\), Metabolic\(^2\), or Renal Disease

AND

No Signs or Symptoms\(^{111}\)
Suggestive of CV\(^1\), Metabolic\(^1\), or Renal Disease

Medical Clearance\(^{111}\) Not Necessary

Continue Moderate** or Vigorous*** Intensity Exercise

May Gradually Progress Following ACSM Guidelines\(^7\)

Medical Clearance\(^{111}\) Asymptomatic

Medical Clearance (within the last 12 months if no change in signs/symptoms) Recommended Before Engaging in Vigorous*** Intensity Exercise

Discontinue Exercise and Seek Medical Clearance

Any Signs or Symptoms\(^{111}\)
Suggestive of CV\(^1\), Metabolic\(^1\), or Renal Disease

Medical Clearance\(^{111}\) Asymptomatic

Medical Clearance\(^{111}\) Not Necessary

Continue with Moderate** Intensity Exercise

Following Medical Clearance, May Gradually Progress as Tolerated Following ACSM Guidelines\(^8\)

Gradually Progress as Tolerated Following ACSM Guidelines\(^8\)

May Return to Exercise Following Medical Clearance

RISK FACTOR ASSESSMENT

- Most recent ACSM guidelines removed CVD risk factor assessment from the algorithm because (1) Evidence shows the ability to predict SCD and AMI from CVD risk factors is low, and (2) Suggests that risk factor-based screening may be overly conservative.
- Identifying and controlling CVD risk factors continue to be important objectives for overall health.
**What is Medical Clearance?**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Possible Evaluation for Asymptomatic Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Disease</td>
<td>EKG, Exercise stress test (ACC, 2002)¹²</td>
</tr>
<tr>
<td>Diabetes</td>
<td>EKG¹³</td>
</tr>
<tr>
<td>Hypertension</td>
<td>“Exercise testing is not recommended for most patients who start exercise program”¹⁴</td>
</tr>
<tr>
<td>Pulmonary Disease</td>
<td>Consider clinical tests (6 minute walk, shuttle walk), spirometry¹⁵</td>
</tr>
</tbody>
</table>

GIVE GUIDANCE

AEROBIC EXERCISE

MUSCLE STRENGTHENING

FLEXIBILITY

BALANCE
<table>
<thead>
<tr>
<th>Component</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerobic exercise</td>
<td>Brisk walking, jogging, swimming, water aerobics, tennis, golf without use of a cart, exercise classes</td>
</tr>
<tr>
<td>Muscle strengthening</td>
<td>Resistance bands, weight machines, handheld weights, heavy gardening, carrying groceries</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Stretching exercises performed twice a week for &gt;10 minutes, ideally after other activities</td>
</tr>
<tr>
<td>Balance</td>
<td>Balance exercises and participation on classes. Tai chi may be more effective at reducing serious falls versus multimodal or stretching exercises</td>
</tr>
</tbody>
</table>
FLEXIBILITY EXERCISES

Source: UpToDate: Physical Activity and Exercise in Older Adults. Updated May 28, 2019.
BALANCE EXERCISES

Source: UpToDate: Physical Activity and Exercise in Older Adults. Updated May 28, 2019.
EXERCISE PRESCRIPTION

• A verbal or written recommendation for physical activity that should include the modality, frequency and intensity, and short and long term goals to help maintain motivation.
**FITT Mnemonic**

- **F** – Frequency
  - **F** Three days a week
- **I** – Intensity
  - **I** Moderate
- **T** – Time
  - **T** 20 to 30 minutes
- **T** – Type
  - **T** Brisk walking
Initial condition stage prescription for an older adult with diabetes who performs less than 150 minutes of moderate intensity physical activity per week.

Sample Exercise Prescription

Weeks 1 and 2*

Aerobic activities

For 3 days per week (frequency), walk briskly (activity, intensity) for 20 minutes (duration) each day at the local park after dinner (setting).

Flexibility training

For 3 days per week (frequency), stretch calf and thigh muscles (activity, muscle groups) for 5 minutes each day at home (setting) after walking (aerobic activity).

Resistance training

For 2 days per week (frequency), lift 5-lb dumbbells, front arm and side arm raises (activity, muscle groups) for 2 sets of 5 repetitions each day at home (setting).

Weeks 3 and 4 (increase duration of aerobic activity and add more resistance training)

Aerobic activities

For 3 days per week (frequency), walk briskly (activity, intensity) for 30 minutes (duration) each day at the local park after dinner (setting).

Flexibility training

For 3 days per week (frequency), stretch calf and thigh muscles (activity, muscle groups) for 5 minutes each day at home (setting) after walking (aerobic activity).

Resistance training

For 2 days per week (frequency), lift 5-lb dumbbells, front arm and side arm raises, and perform wall push-ups (activity, muscle groups) for 2 sets of 10 repetitions each day at home (setting).

Advancing aerobic exercise

- Patients should advance their exercise and increase their intensity for optimal cardiovascular benefit.\(^{19}\)

**Initial Conditioning**
- 40% progressing to 70% of maximum heart rate
- 3 days per week, sessions lasting 12-20 minutes
- Occurs over 3-4 weeks

**Improvement**
- 60% progressing to 85% of maximum heart rate
- 3 to 5 days, sessions 30-45 minutes
- Occurs 4-5 months

**Maintenance**
- 50% progressing to 85% of maximum heart rate
- 3 to 5 days, sessions 30-45 minutes
- After 6 months

• Individual’s perception of how hard they are working. In a young adult, you can add a 0 to the rating to estimate the corresponding heart rate when performing that activity.²⁰
IMPORTANT GUIDELINES

• In general, increase exercise intensity gradually.
• Emphasize perceived exertion and prescribed training heart rates.
• Educate patients about recognizing symptoms.
• Encourage patients to listen to their body.
• Try to reduce inertia.
  • Workday walking routine
  • Integrating into everyday activities
  • Finding a partner
  • Fitness professional
## Special Populations

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis</td>
<td>Aerobic activities that minimize joint stress (e.g. swimming, water aerobics, stationary cycling).(^{21})</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Resistance exercises and impact loading activities. Strengthening programs should be gradual.(^{22})</td>
</tr>
<tr>
<td>Cognitive Impairment</td>
<td>Similar to standard recommendations. Involve caregiver.</td>
</tr>
<tr>
<td>High risk for falls</td>
<td>Balance exercises, fall prevention programs.(^{23})</td>
</tr>
</tbody>
</table>

\(^{21}\) Lee PG, Jackson EA, Richardson CR. Exercise Prescriptions in Older Adults. Am Fam Physician. 2017;95(7):425-432.
RESOURCES

- NIH - National Institute on Aging

4 Types of Exercise
Learn about endurance, strength, balance, and flexibility.

How to Get Started with Exercise
Being physically active is one of the best things you can do for your health. Get started!

Real-Life Benefits of Exercise
Staying active can help your physical and emotional health and mobility.

Staying Motivated to Exercise
Find ways to stay motivated and fit exercise into your life.

Have Fun and Be Active
Find fun, simple ideas to keep you active throughout the year.

Finding the Right Fitness Clothes
Choosing the right clothing and shoes is important for staying safe and comfortable.
CONCLUSIONS

• There are many benefits to physical activity in older adults. A little is better than none, and it is never too late to start.

• Providers can help by motivating patients, conducting pre-exercise evaluations, give guidance, and provide resources.

• Exercise prescriptions use the FITT mnemonic. Advancing exercise can be done while monitoring heart rate and RPE.
THANKS!

ANY QUESTIONS?
Another trial found that moderate intensity physical activity reduced major mobility disability (MDD), and that there were positive effects of physical activity even in frail individuals.7

START LOW

- Ultimately, decisions should be individualized. Typically, start with light to moderate intensity exercise in sedentary patients and increase while paying attention to any symptoms. This also helps reduce initial inertia.

- Research has primarily focused on vigorous and near-maximal intensity physical activity. It is thought the risks from light and moderate intensity exercise is substantially lower.¹⁶

TAI CHI

• 2019 study compared patients receiving tai chi to those receiving multimodal exercise intervention and stretching exercises.
• Participants were 70 years or older, and had either fallen in the last 12 months or had impaired mobility.
• Primary outcome was moderate and serious injurious falls during 12 months.
Table 3. Number of Injurious Falls and Intervention Group During 12 Months Using Stretching Exercise as a Reference Group

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Unadjusted IRR (95% CI)</th>
<th>P Value</th>
<th>Adjusted IRR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate injurious falls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TJQMBB vs stretching exercise</td>
<td>0.51 (0.35-0.74)</td>
<td>&lt;.001</td>
<td>0.53 (0.36-0.76)</td>
<td>.001</td>
</tr>
<tr>
<td>Multimodal exercise vs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stretching exercise</td>
<td>0.62 (0.42-0.89)</td>
<td>.01</td>
<td>0.65 (0.45-0.94)</td>
<td>.02</td>
</tr>
<tr>
<td>Serious injurious falls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TJQMBB vs stretching exercise</td>
<td>0.25 (0.13-0.48)</td>
<td>&lt;.001</td>
<td>0.25 (0.13-0.46)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Multimodal vs stretching exercise</td>
<td>0.56 (0.33-0.94)</td>
<td>.03</td>
<td>0.53 (0.32-0.88)</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency department visits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TJQMBB vs stretching exercise</td>
<td>0.26 (0.12-0.52)</td>
<td>&lt;.001</td>
<td>0.26 (0.14-0.51)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Multimodal vs stretching exercise</td>
<td>0.55 (0.31-0.97)</td>
<td>.04</td>
<td>0.52 (0.30-0.91)</td>
<td>.02</td>
</tr>
<tr>
<td>Hospitalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TJQMBB vs stretching exercise</td>
<td>0.27 (0.10-0.73)</td>
<td>.01</td>
<td>0.26 (0.10-1.71)</td>
<td>.008</td>
</tr>
<tr>
<td>Multimodal vs stretching exercise</td>
<td>0.60 (0.28-1.29)</td>
<td>.19</td>
<td>0.58 (0.27-1.24)</td>
<td>.16</td>
</tr>
</tbody>
</table>