THE EXERCISE PRESCRIPTION: AN ESSENTIAL ELEMENT OF THE PRIMARY CARE VISIT

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Learning Objectives

• Review national statistics and trends
• Describe exercise benefits
• Examine essential steps in patient assessment and counseling
• Delineate four components of exercise prescription
• Address special population needs in preparing the exercise prescription
• Evaluate community and other resources
Current Physical Activity Recommendations

• 30-40 minutes/day moderate intensity PA, on most days of the week
• 150 minutes of moderate or 75 minutes of vigorous activity weekly
• 60 minutes per day for children
• Can be incorporated into all daily activities including work and leisure activities in short bouts of 10 to 15 minutes

Current National Statistics: PA Adherence Rates

• 47% of adults met PA guidelines for aerobic activity
• 22.4% of adults met the guideline goals for muscle strengthening
• 18.8% of adults 18 years old and over met both aerobic and muscle strengthening standards
• Approximately, 1/3 of adults do no exercise in their leisure time

Other National Data

- PA is less common among women than men.
- PA participation declines with advancing age.
- Non-Hispanic blacks and Hispanic adults are more likely to be inactive than Non-Hispanic whites.
- Higher education levels are associated with PA guideline adherence.

Roger, VL. *Circulation.* 2012;125(22):e2-e220.
Summary of Major Research Findings

• Any physical activity is better than none
• Both aerobic and resistance exercise are helpful
• Many health risks are reduced and health outcomes improved
• Most benefits occur with at least 150 minutes of moderate activity
• Additional benefits with more frequent, longer lasting and more intense PA
• Benefits of PA far outweigh risks

# Health Benefits with Strong Evidence

## CVD-Related Benefits
- Lower CAD, HTN and CVA risk
- Lower dyslipidemia risk
- Lower risk for metabolic syndrome and DM2
- Prevention of weight gain

## Other Benefits
- Lower risk off early death
- Lower risk of breast and colon cancer
- Reduced depression
- Better cognitive function in older adults
- Improved fitness and sense of well-being

Benefits of Increasing Exercise for the Aging Population

• Improved conditioning, strength, flexibility, and overall physical fitness
• Improved mobility and reduced onset of mobility-related disability
• Reduced risk of cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety, depression, and cognitive decline
Benefits of Increasing Exercise for the Aging Population

• Reduced likelihood of falls and related injuries
• Possible decreased incidence and severity of functional limitations
• Improved patient outcomes in several chronic conditions, including mood disorders, dementia, chronic pain, congestive heart failure, stroke, constipation, and sleep disorders
Relevant Citations


• King AC, Guralnik JM. Maximizing the potential of an aging population. JAMA 2010; 304:1944


Value of Initiating Exercise for the Aging Population

- Benefits occur with initiation and maintenance of exercise
- Even previously sedentary who start to exercise as late as age 85 demonstrate a significant survival improvement
- Patients with physical limitations experience an attenuation of the onset of mobility-related disability
- Improved fitness with exercise has been noted even among institutionalized older adults

Exercise is a free medicine available to just about anyone.
Starting the Process

• Office-based short intervention as the nexus of change
• Majority of patients have greatest number of visits with PCP
• Lost opportunity for patient education as many providers do not take the time to have this discussion

Cognitive-Behavioral Strategies – Class 1 Recommendations

- Goal setting (A)
- Self-monitoring (A)
- Frequent and prolonged contact (B)
- Feedback and reinforcement (A)
- Self-efficacy enhancement (A)
- Motivational interviewing (A)

The Five A Approach for Lifestyle Counseling

• Assess
• Advise
• Agree
• Assist
• Arrange

Assess

- Current exercise and PA level
- Awareness of exercise resources and health benefits
- Perceived barriers and confidence in ability to change
- Identification of one strategy to increase activity level

Advise

- Discuss risk factors/biochemical markers as a basis to increase activity
- Promote exercise as the best medicine for many problems
- Be specific about what behaviors will reduce risk factors

Agree

- Collaborate in goal setting
- Provide alternative ways to meet objectives
- Form a plan
  - Record in medical documentation
  - Have patient write down interim goals

Assist

• Take realistic stock of patient’s situation
• Recount perceived barriers
• Offer several approaches and resources as solutions
• Be aware of evolving community, internet and digital resources

Arrange

- Make necessary referrals
- Provide information regarding resources and handouts
- Ensure follow up appointment
- Use friendly phone call or text to encourage change
- Review exercise plan and progress next visit

Health Screening Prior to PA Initiation

• CV event risk is increased during vigorous activity; however absolute risk of cardiac event is low in healthy people
• Exercise confers CV benefits that far outweigh risks for light to moderate intensity exercise programs
• Exercise testing poor predictor of CVD events in asymptomatic individuals
• Conflicting recommendations among major organizations

ACSM Recommendations

• Vast majority do not require exercise testing prior to initiating a moderate intensity PA program

• Use a self-guided screening tool such as the Physical Activity Readiness Questionnaire (PAR-Q) or the modified AHA/ACSM Health/Fitness Facility Preparticipation Screening Questionnaire

ACSM Recommendations for Adolescents and Adults

- Identify those with symptoms/signs that suggest CV, pulmonary or metabolic disease
  - Chest pain
  - SOB with mild exertion
  - Dizziness or syncope
  - Orthopnea/PND
  - Ankle edema
  - Arrhythmias or known heart murmur
  - Intermittent claudication

PAR-Q

• Has your healthcare provider ever said that you have a heart condition and that you should only do physical activity recommended by a healthcare provider?
• Do you feel pain in your chest when you do physical activity?
• In the past month, have you had chest pain when you were not doing physical activity?
• Do you lose your balance because of dizziness or do you ever lose consciousness?
• Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?

Exercise is Medicine. Health Care Provider’s Action Guide.
Acessed February 15, 2015
PAR-Q Score Interpretation

All ‘no’ answers
• Can begin independent PA program
• Exercise rx based on 2008 guidelines
• Referrals to professional certified trainer or other fitness specialist

‘Yes’ answers
• Use clinical judgment to determine if person needs supervision or can be started slowly
• High risk individuals need to be referred to clinical exercise program such as cardiac or pulmonary rehabilitation

Exercise is Medicine. Health Care Provider’s Action Guide.
Acessed February 15, 2015
ACSM Recommendations for Adolescents and Adults

- For those with diagnosed disease, determine who would benefit from a physical exam with exercise testing
- Individualize recommendations regarding starting and progression of exercise program to minimize potential for CV event
- Preparticipation health screening is different than a periodic medical exam

ACSM Recommendations for Older Adults

• Most do not require exercise testing prior to initiating a moderate intensity PA program
• Presence of multiple risk factors indicates need for physical exam and exercise testing for prior to strenuous exercise

Risks of Exercise

- Musculoskeletal injury due to overuse most common
- Others:
  - Reactive airway disease
  - Arrhythmias
  - SCD/MI
  - Rhabdomyolysis

Preparing the Exercise Prescription
Exercise Prescription and Referral Form

Exercise is Medicine. Health Care Provider’s Action Guide.  
Acessed February 15, 2015
Aerobic Activity

- 150 minutes or more of moderate intensity exercise per week
- 75 minutes or more of strenuous exercise per week
- Combination of the above to achieve targeted exercise volume
- Exercise may be accumulated in bouts of 10 minutes or more over the day

OHSU Cardiac Rehabilitation Exercise Progression Plan

• **FREQUENCY**
  - Week 1-3: Three times per day
  - Week 4-6: Two times per day
  - Week 7-10: Once per day

http://www.ohsu.edu/xd/health/services/heart-vascular/services/cardiac-rehabilitation/health-information/upload/CAR-3064469-Sample-Walking-Program.pdf
OHSU Cardiac Rehabilitation Exercise Progression Plan

- WEEK WARM-UP BRISK WALK COOL DOWN
- Week 1 - 5 minutes 5 minutes 5 minutes
- Week 2 - 5 minutes 8 minutes 5 minutes
- Week 3 - 5 minutes 11 minutes 5 minutes
- Week 4 - 5 minutes 14 minutes 5 minutes
- Week 5 - 5 minutes 17 minutes 5 minutes
- Week 6 - 5 minutes 20 minutes 5 minutes
- Week 7 - 5 minutes 23 minutes 5 minutes
- Week 8 - 5 minutes 26 minutes 5 minutes
- Week 9 - 5 minutes 29 minutes 5 minutes
- Week 10 - 5 minutes 30 minutes 5 minutes

http://www.ohsu.edu/xd/health/services/heart-vascular/services/cardiac-rehabilitation/health-information/upload/CAR-3064469-Sample-Walking-Program.pdf
Resistance Training

• Major muscle group training 2-3 times weekly using ‘whole body’ approach
• Selected muscle group training using the ‘split’ approach 3 times weekly
• 48 hours between training the same muscle group

Flexibility

- Exercises targeting major muscle groups
- 10-30 second hold to point of tightness effective for joint ROM enhancement in younger adults
- 30-60 second hold may benefit older adults
- Minimum 2-3 times weekly improves stretch hold; most effective when done daily

Neuromotor Exercise – Functional Fitness

• Involves balance, coordination, gait, agility and proprioceptive training
• May be beneficial for young and middle age adults; definitively helpful for aging persons
• Optimal frequency not known; some support for 2-3 times a week for a total of 60 minutes or more a week

Foam Rolling or Myofascial Release

• Perform both before and after exercise
• Engage all major muscle groups especially those that are painful or are cramping
• Roll slowly over each muscle group pausing for 2-5 seconds over muscle segments
• Pause for longer periods up to 30 seconds over muscle ‘knots’
• Repeat twice over troublesome areas

Calf Rolling for Cramps/Knots

Iliotibial Band Rolling

Hip Extensor Rolling

## Exercise Progression Summary

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sedentary Persons</th>
<th>Persons Who Engage in Irregular Physical Activity</th>
<th>Persons Who Exercise Regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>Decrease health risks</td>
<td>Improve adherence and become a regular exerciser</td>
<td>Maintain health</td>
</tr>
<tr>
<td></td>
<td>Become more active</td>
<td>Optimize aerobic fitness</td>
<td>Participate or compete in sports</td>
</tr>
<tr>
<td>Activities</td>
<td>Walking, lifestyle activity, cycling, low-impact</td>
<td>Individual aerobic exercise, group exercise classes, resistance training, lifestyle</td>
<td>Individual and group aerobic exercise,</td>
</tr>
<tr>
<td></td>
<td>aerobics, circuit weight training</td>
<td>activity</td>
<td>competitive games and sports, resistance</td>
</tr>
<tr>
<td>Exertion level</td>
<td>Moderate</td>
<td>Moderate to vigorous</td>
<td>Vigorous</td>
</tr>
<tr>
<td>Intensity of aerobic</td>
<td>40% to 60% of maximum heart rate</td>
<td>50% to 65% of maximum heart rate</td>
<td>65% to 85% of maximum heart rate</td>
</tr>
<tr>
<td>exercise</td>
<td>Keep constant</td>
<td>Gradually increase</td>
<td>Keep constant</td>
</tr>
<tr>
<td>Duration</td>
<td>15 to 20 minutes uninterrupted activity or 30 minutes</td>
<td>20 to 60 minutes</td>
<td>30 to 60 minutes</td>
</tr>
<tr>
<td></td>
<td>of accumulated activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>5 to 7 days per week</td>
<td>≥3 days per week</td>
<td>3 to 5 days per week</td>
</tr>
<tr>
<td>Progression</td>
<td>Start slow, progress gradually, increase duration by 5%</td>
<td>Increase frequency by 1 day per week</td>
<td>Maintain or increase current activity and</td>
</tr>
<tr>
<td></td>
<td>per week</td>
<td></td>
<td>training goals, consider risk for injury</td>
</tr>
<tr>
<td>Counseling style</td>
<td>Empathetic, supportive, encouraging</td>
<td>Praising accomplishments and problem solving with the patient</td>
<td>Informative</td>
</tr>
</tbody>
</table>
ExRx for the Aging Population
Exercise Program Components

• Aerobic exercise
• Muscle strengthening
• Flexibility
• Neuromotor exercise including balance

Current AHA/ACSM Activity Recommendations

• More intensity and longer exercise duration lead to greater health benefits

• Recommended aerobic activity levels are in addition to ADL

• 3 options:
  – Minimum of 30 minutes of moderate-intensity aerobic activity on five days each week
  – Minimum of 20 minutes of vigorous-intensity activity on three days each week
  – Combination of the two


Initiating Aerobic Exercise

• Exercise can be spread throughout the day to achieve recommended activity levels
• Obese individuals may need 300 minutes of activity in addition to diet to manage weight control
• Chronically ill may not be able to achieve minimal levels of recommended activity but should be as active as possible
Assessing Exercise Intensity

• Use of absolute METS inappropriate for ageing population
• Self reported effort better for determining activity intensity
• Borg Scale
  – Moderate exertion rated 5-6/10; associated noticeable increase in respiratory and heart rate
  – Strenuous exertion rated 7-8/10 associated with large increase in heart and respiratory rate
  – Should be able to carry on conversation while exercising; if not, activity is too strenuous

10-point scale of perceived exertion

10
ALL-OUT EFFORT

9

8
VIGOROUS-INTENSITY EFFORT
Large increase in heart rate and breathing

7

6
MODERATE-INTENSITY EFFORT
Moderate increase in heart rate and breathing; can "talk" while "walking"

5

4

3
LIGHT-INTENSITY EFFORT
Slow walking with frequent stopping

2

1

0
SITTING
No movement

Muscle-Strengthening for Increased Performance

- Strengthening activities should be done at least two non-consecutive days per week
- Exercises should target 8 to 10 major muscle groups at an appropriate exertion level
- 10 to 15 repetitions of each exercise at a moderate to high level of intensity with gradually increase in resistance ideal
- Muscle soreness is normal at first and should subside in a few weeks
- More gradual incremental strengthening best for those with chronic pain to maximize tolerance and exercise adherence

Muscle-Strengthening – Helpful Hints

• Initial weight should be one that an individual can lift about eight times
• When able to perform 10-15 repetitions, weight can be increased again until only 8 repetitions can be done
• Breathing should be normal while lifting weights, exhaling as the weight is lifted
• Movements should be slow through a repetition: two to three seconds to lift, hold for one second, and three to four seconds to return to the starting position
• Avoid locking the joints in a tightened position.

Flexibility

• Little research on impact on physical wellness but basis for performing all activities

• Helpful tips:
  – Do twice a week for at least 10 minutes
  – Perform after aerobic or strengthening activities after warm up
  – Breathe normally; do not bounce into a stretch.
  – Stretch slowly into the desired position and hold; hold for 10 to 30 seconds
  – Should feel a slight pull but should not stretch to the point of pain.

Chest Stretch

http://exerciseismedicine.org/YourPrescription.htm
Thigh Stretch

http://exerciseismedicine.org/YourPrescription.htm
Neuromotor Exercise

• Balance problems common in elderly adults
• Balance exercise improve stability and may prevent falls and related injuries
• Participation in group classes improves stability and may prevent falls and associated injuries
• Selected activities:
  – Tai Chi
  – Gait pattern challenges such as heel-to-toe walking
  – One foot balancing to increase center of gravity awareness
  – Often combined with strengthening exercises

Neuromotor Exercise – Balance Walk

http://exerciseismedicine.org/YourPrescription.htm
Neuromotor Exercise – One Foot Stand

http://exerciseismedicine.org/YourPrescription.htm
Patients with Multiple Morbidities

- Chronic conditions increase with age
- Likely 50 percent of patients with diabetes will also have arthritis
- 30 percent will have coronary disease, or both.
- The American College of Sports Medicine’s initiative, Exercise is Medicine provides patient handouts with specific exercise prescriptions available at:
  [http://exerciseismedicine.org/YourPrescription.htm](http://exerciseismedicine.org/YourPrescription.htm)
Obesity

- Start with non-weightbearing exercise
- Avoid high impact activity due to possible orthopedic stress
- Duration and frequency as tolerated
- Premeal exercise prior to breakfast best due to increase in lipolysis

Arthritis

- Select exercises that minimize joint stress
- Start strengthening at low intensity; progress as pain level permits
- Emphasize flexibility and full ROM
- Avoid during acute flares
- Warn that joint pain may increase after activity; ice area to prevent inflammation
- Moderate physical activity if pain persists/work with pain med timing

Osteoporosis

- Standard PA recommendations apply but greater placed on weight-bearing, balance and strengthening activities
- Excessive weight bearing with the initiation of exercise may increase the risk of fractures
- Individuals with previous osteoporotic fractures require more individualized program
- Should avoid sudden movements, jarring or twisting movement and heavy lifting
- Best to consult a professional therapist for activity plan after a fracture to relieve pain and regain mobility initially

Diabetes

- Monitor blood sugar because hypoglycemia or hyperglycemia can occur with exercise.
- Consume a meal 1-3 hours before exercising, administer insulin at least 1 hour before exercise, and, if the blood glucose level is greater than 250 mg/dL, check urine for ketones.
- Supplement energy (caloric) intake every 30 minutes and maintain adequate fluid replacement.
- Monitor the glucose level, increase energy (caloric) intake for 12-24 hours following activity, and expect postexercise hypoglycemia; thus, appropriately adjust insulin dosing.

Functionally Limited or Frail

- Go slow and start low, e.g., walk for 5 minutes daily to start
- Training specificity – focus on doing a necessary activity with confidence
- Even modest activity/strengthening helps improve functional capacity
- Dose response – association between intensity and outcome
  - Higher intensity will yield better outcomes
  - Older institutionalized adults had improvement in knee strength, six-minute walk distance, chair stands, stair climbing with low-intensity training

Aging Adult Exercise Recommendation Bibliography

ExRx.Net

- Exercises in all four categories of exercise
- Calculators for exercise testing and progression
- Suggests programs for specific exercise goals
- Patient friendly handouts and links to trackers
Exercise is Medicine

- Exercise is Medicine
  - Address: http://exerciseismedicine.org
- Resources
  - Health Care Provider Toolkit
  - Physical Activity Readiness Questionnaire
  - Risk Assessment Form
  - Risk Management Decision Tree
  - Exercise /Prescription and Referral Form
  - Links to local resources
Other Resources

• Community resources
• Walking programs
  – For patients: http://www.startwalkingnow.org/why_start_walking.jsp
  – For organizations: http://www.heart.org/HEARTORG/GettingHealthy/WorkplaceWellness/Workplace-Wellness_UCM_460416_SubHomePage.jsp
Leveraging for Success

• Make it mutual
• Individualize the prescription
• Make it real; life does get in the way
• Practice what you preach
Take Home Message

• Exercise as a free medicine is available to just about everyone

• An exercise prescription provides the structure so that the patient can realize real health benefits no matter what their baseline condition
QUESTIONS?