



Aging, Activity, and Exercise
in Myositis:
Exercise for Every Level of Function

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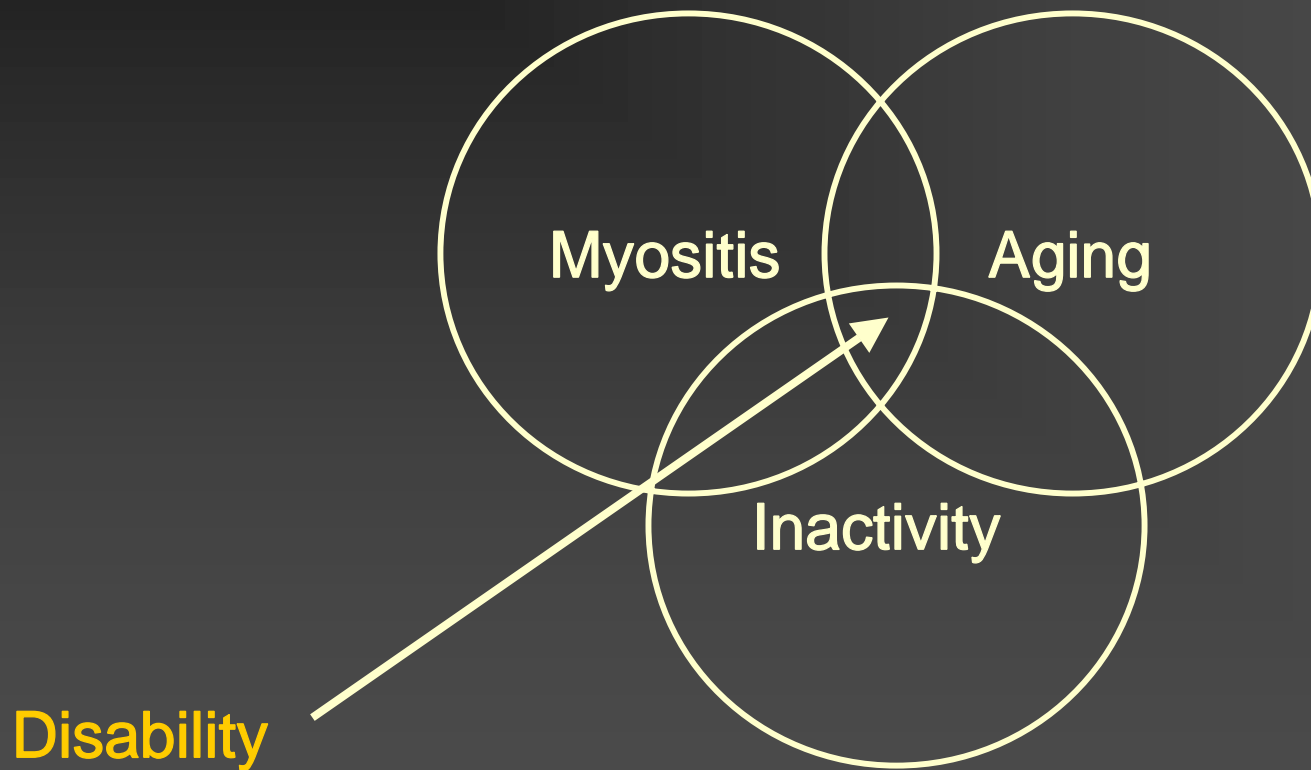
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What Does Aging Have to Do With Myositis?



What Does Aging and Activity Have to Do With Myositis?



Physical Activity, Health, and Aging

- The graying of America
 - The new gerontology
 - Elderly – fastest growing segment of population
 - Lifestyle dictates a large part of aging
 - Successful aging requires an active lifestyle



What's the Difference Between "Activity" and "Exercise"?

■ Terminology

- **Physical activity:** any motion of the body that results from skeletal muscle contraction and energy expenditure
- **Exercise:** any physical activity used to develop or maintain fitness, or develop a skill.

What's the Difference Between "Activity" and "Exercise"?

■ Terminology

- **Sedentary:** those using $< 10\%$ of their daily caloric expenditure in the performance of moderate- or high-intensity activities

Is it Safe to Exercise?

- Safety of exercising
 - Very small risk, decreases as fitness improves
 - Physician clearance is recommended (for disease status and cardiopulmonary health)
 - Sedentary death syndrome (SEDS)
 - Sedentary behavior leads to a group of problems which may be fatal
 - ✓ No published article on myositis and exercise reports negative results
 - ...However, these exercise programs were designed by health professionals
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Strengthening Studies: 2000 - 2005

Table 2. Summary of strength training studies

Reference	Sample	Protocol	Results		
			Impairments	Functional limitations	Disability/quality of life
Arnardottir <i>et al</i> , 2003	<i>n</i> = 7; IBM	Per Alexanderson <i>et al</i> , 1999	↔ Isokinetic concentric peak torque, ↔ MMT	↔ Functional Index†	n/a
Varju <i>et al</i> , 2003	<i>n</i> = 21; PM/DM (acute, <i>n</i> = 10; chronic, <i>n</i> = 11)	Isotonic strengthening, augmented with suspension sling for weaker subjects, massage, modalities, stretching, respiratory training 2 sets per isotonic exercise with 3-min rest periods, 5 visits/wk, for 3 wks	Proximal and distal isometric peak force: ↑ 17 and 37% (acute), ↑ 46 and 37% (chronic) Spirometry: ↑ 17% FVC, ↔ FEV ₁ /FVC, FEF _(25-75%) (acute only, chronic: no differences) Fatigue VAS: ↓ 11% (acute), ↓ 30% (chronic)	n/a	HAQ: ↓ 22% (acute), ↓ 16% (chronic) RM: ↔ score for both groups
Heikkila <i>et al</i> , 2001	<i>n</i> = 22; PM/DM/IBM	Functional strengthening, modalities, walking 2 separate blocks of intervention for 3-wk intervals	↔ Pain VAS	↑ 11% Functional Index†	↔ HAQ
Alexanderson <i>et al</i> , 2000	<i>n</i> = 11; PM/DM	Per Alexanderson <i>et al</i> , 1999	n/a	↑ 15-22% Functional Index†	↑ SF-36 (44% Physical Functioning, 76% Bodily Pain, 80% Vitality)

Physical Activity Readiness Questionnaire

Physical Activity Readiness
Questionnaire - PAR-Q
(revised 1994)

PAR - Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly; check YES or NO.


YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of <u>any other reason</u> why you should not do physical activity?

General Exercise Contraindications:

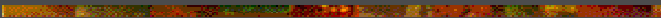
- Unstable chest pain or irregular heart beat
 - Acute strain/sprain or unstable joint
 - Uncontrolled high blood pressure
 - Severe muscle or joint pain
-

Aging and Physiologic Function

- Muscular strength
 - Strength usually peaks between ages 20 and 40
 - Muscle mass decreases after age 40
 - Power loss is greater than strength loss
 - Arm strength deteriorates slower than leg strength
 - Resistance training among the elderly
 - ✓ Elderly respond to weight training similar to younger adults!
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Cardiovascular Disease:
*Weakness is Not Your
Only Enemy!*



Leading Causes of Death in the US in 2002

Number of deaths for leading causes of death

- *Heart Disease: 696,947* ←
- Cancer: 557,271
- Stroke: 162,672
- Chronic lower respiratory diseases: 124,816
- Accidents (unintentional injuries): 106,742
- Diabetes: 73,249
- Influenza/Pneumonia: 65,681
- Alzheimer's disease: 58,866
- Nephritis and nephrotic diseases: 40,974
- Septicemia: 33,865

Coronary Heart Disease: Risk Factors

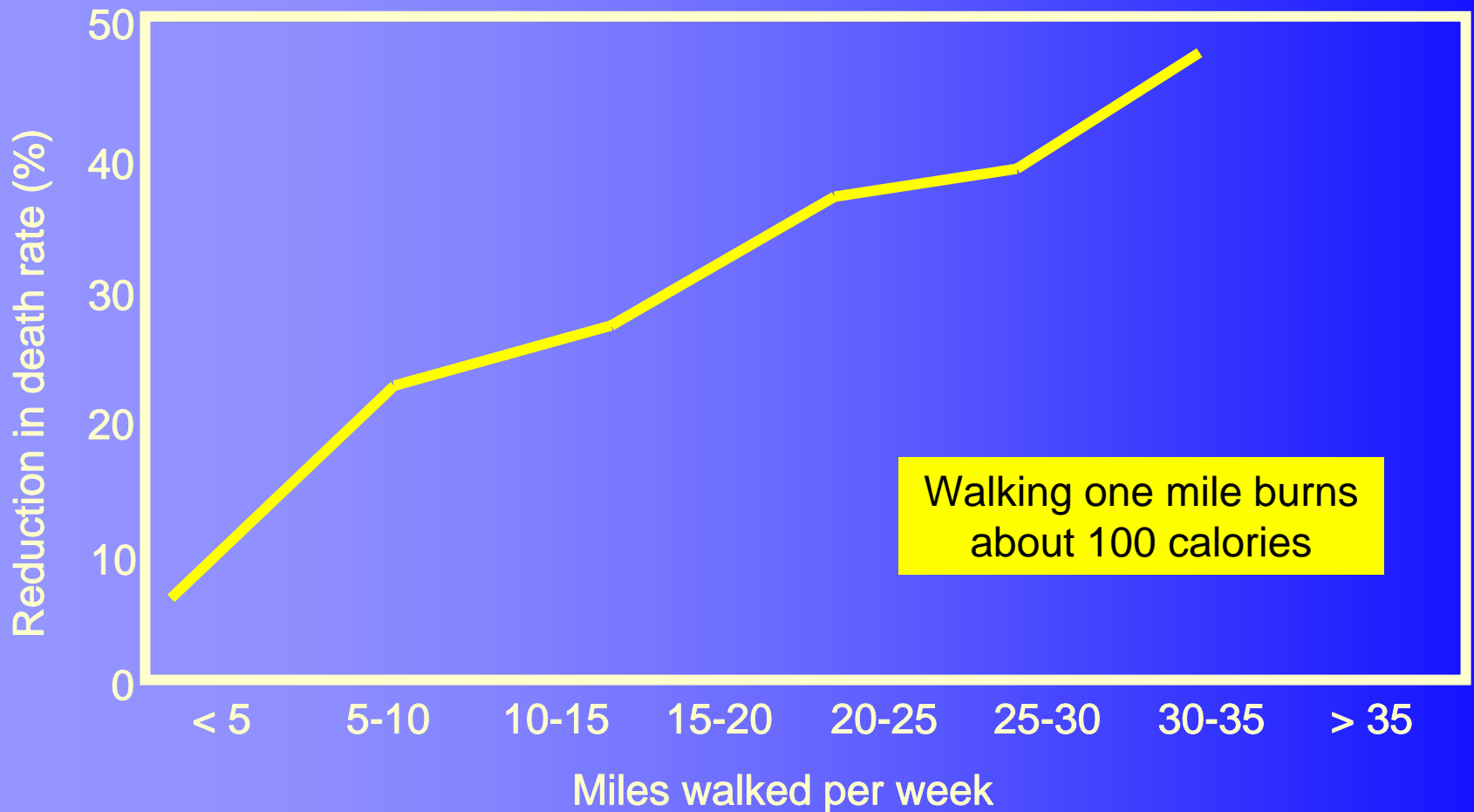
Positive: Increase the likelihood of developing the CVD

1. Family history
 2. Cigarette smoking
 3. High blood pressure
 4. High cholesterol
 5. Impaired fasting glucose
 6. Obesity
 7. Sedentary lifestyle
-

All-Cause Mortality and Fitness

- Normal risk for “all-cause” mortality = 1.0
 - Being overweight = 1.33
 - High cholesterol = 1.45
 - Smoking = 1.89
 - ✓ Low fitness = 2.03
-

Reduction in Death Rate and Aerobic Exercise Volume



Factors that Affect the Aerobic Training Response

- Initial level of aerobic fitness
 - Training load (intensity)
 - Training duration
 - Training frequency
 - Exercise mode
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Components of the Training Session

- Warm-up
 - Stimulus or Conditioning Phase
 - Cool Down
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Warm-up Considerations

- Minimizes cardiac abnormalities:
 - Sudden ↑ in workload may increase the risk of heart attack
 - ❖ O₂ delivery and coronary blood flow cannot meet the demands of a sudden increase in workload!
 - Use of a warm-up ↑ blood flow to the heart
 - Use of a warm-up ↓ the BP response to initial exercise (at target work rates)
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ACSM's Updated Fitness Guidelines and Recommendations

■ Cardiovascular

- 40 – 85% of $VO_{2\max}$
 - 50 – 90% HR_{\max}
 - 3 or more days per week
 - 20 – 60 minutes
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Training Intensity: Aerobic

- Aerobic training intensity
 - Train at a perceived rate of exertion (PRE):
“somewhat hard”
 - Train at a percentage of HR_{max}
 - 60 – 70% HR_{max} to get a training effect
 - Age-predicted maximum heart rates