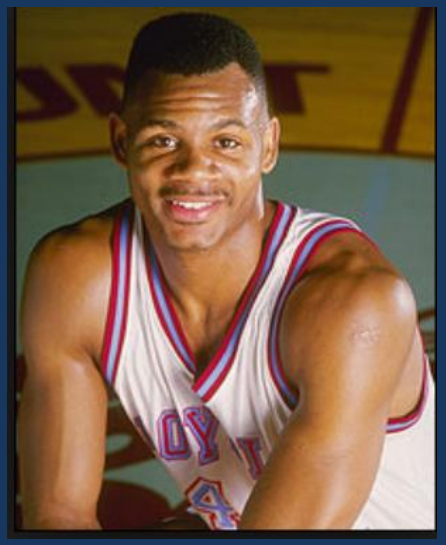
The Exercise Prescription & Recommendations for Exercise Testing



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MedStar Sports Medicine

Conflicts: None

Athletic Affiliations:

Outline

- The Exercise Prescription
- Why you should prescribe exercise
- Recommendations for Exercise Testing
- Athletes with cardiovascular disease

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World Health Organization

GLOBAL RECOMMENDATIONS ON PHYSICAL ACTIVITY FOR HEALTH

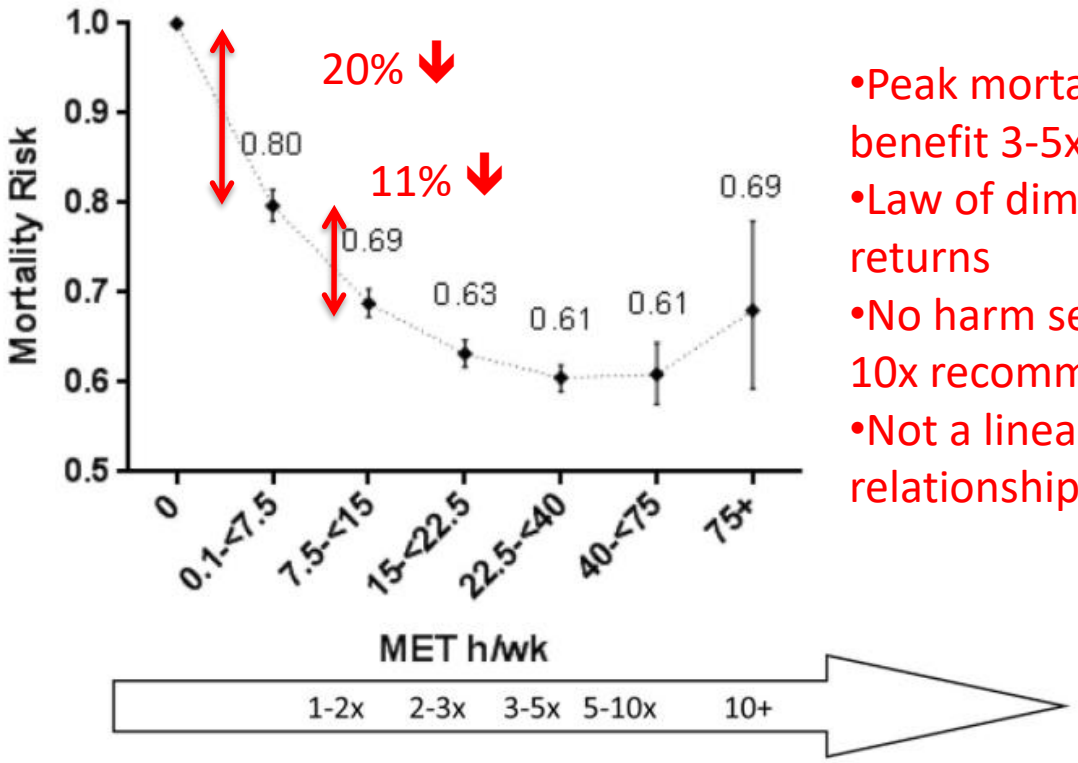
2008

- <18 year old
  - 60 minutes daily of moderate to vigorous
    - vigorous at least 3 days a week
  - Muscle strengthening 3x/week
- 18-64 year old
  - 150 minutes of moderate intensity aerobic activity weekly
  - 75 minutes of vigorous intensity aerobic activity weekly
  - Muscle strengthening 2x per week
- >65
  - Same or
  - Do as much as you can

The Talk Test

- Moderate intensity: can talk but not sing, cannot have full conversation
- High intensity: can say a few words before pausing for a breath

Why 150 minutes?



- Peak mortality benefit 3-5x
- Law of diminishing returns
- No harm seen at 10x recommended
- Not a linear relationship

Figure 1. Hazard ratios (HRs) and 95% confidence intervals (CIs) for leisure time moderate- to vigorous-intensity physical activity and mortality[a-c]

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Arem et al. JAMA Intern Med. 2015:175(6):959-967

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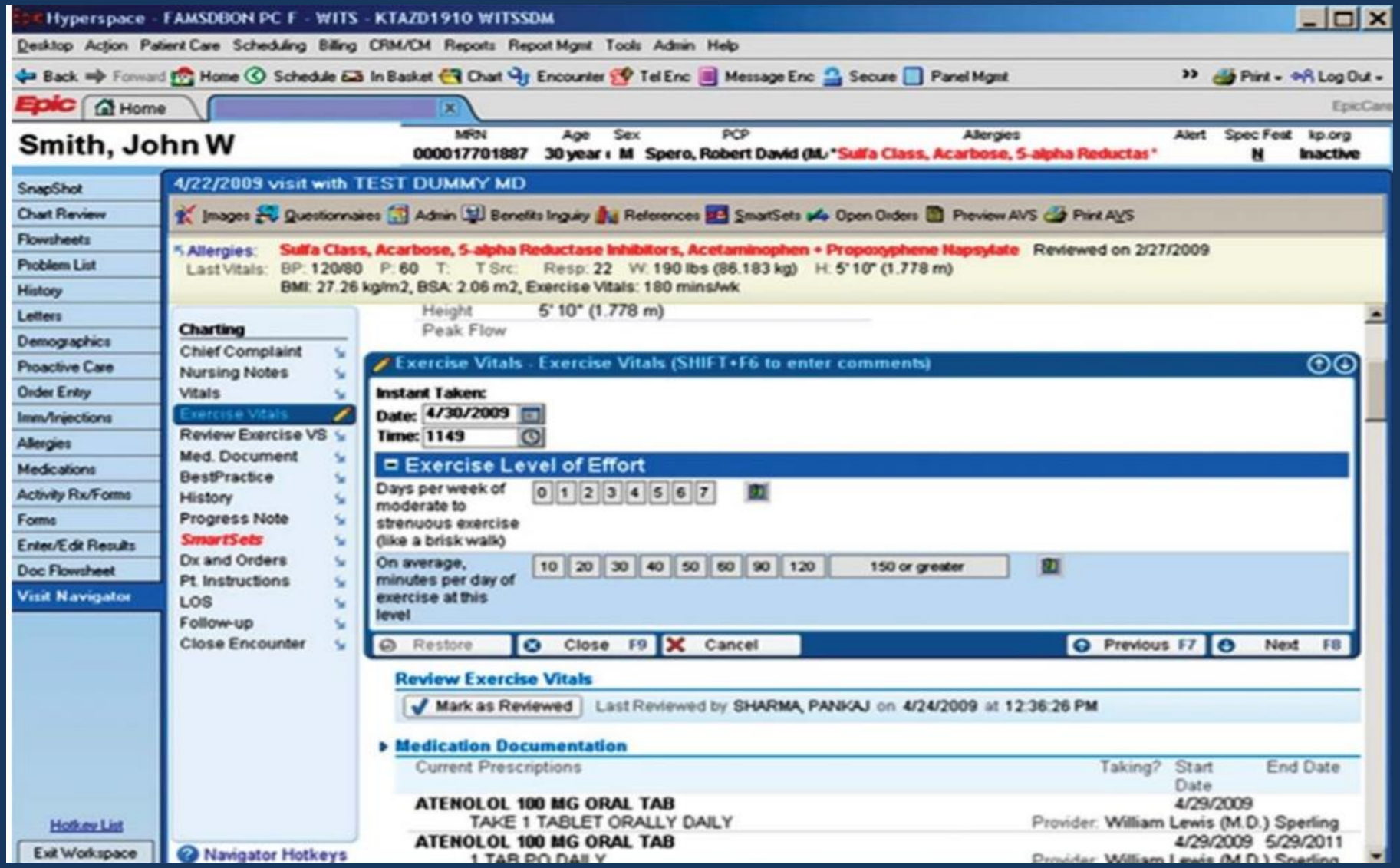
Exercise Prescription

- Takes into account
  - Overall health
  - Risk factors
  - Functional capacity
  - Motivation/Barriers
- Discuss the activity (standing, walking, roller skating, elliptical, etc.)
- Specify Exercise Dose (Duration x Frequency x Intensity)
- Start slow and build as they hit targets
- Physical trainer - help guide, prevent injury, hold accountable
- Prescribe it!
  - Makes it real
  - Tailor to each patient

What happens now

- “You need to start exercising regularly and lose weight.”

What should be happening



What should be happening

Your Prescription for Health
ExeRcise is Medicine®

Name: _____ Date: _____

❑ Aerobic Activity

Type: Walk Run Swim Bike Other_____

Frequency (days/week): 2 3 4 5 6 7

Intensity:	Light (A Casual Walk)	Moderate (A Brisk Walk)	Vigorous (Jogging or Running)

Time (minutes/day):	10	20	30	60	60 or more

Steps/day:	2,500	5,000	7,500	10,000	More than 10,000

❑ Strength Training

- Muscle strengthening should be done at least two days per week
- Exercise should be done to strengthen all major muscle groups: legs, hips, back, chest, abdomen, shoulder, arms
- For each exercise, 8-12 repetitions should be completed
- Examples include bodyweight exercise (e.g. push-ups, lunges), carrying heavy loads, and heavy gardening

Physician Signature: _____

What do we know about physical activity?

- Regular physical activity can protect your joints, prevent falls and injuries, and reduce your risk of disease, such as type 2 diabetes, high blood pressure, heart attacks, and some cancers.
- Improving your fitness can be as important, or more, than losing weight.
- It is also important to avoid inactivity (*i.e.,* the amount of time you spend sitting) as much as possible. Studies suggest limiting your sedentary time to less than 6-8 hours a day.

What about aerobic activity?

- The *2008 Physical Activity Guidelines for Americans* recommend either 150 minutes per week of moderate activity, 75 minutes of vigorous activity, or a combination of both, for adults.
- Moderate activity is done at a pace where you can carry on a conversation, but cannot "sing". Examples include: *brisk walking, slow biking, water aerobics,* and *general gardening.*
- Vigorous activity is done at a pace where you cannot carry on a conversation and may be out of breath. Examples include: *jogging/running, swimming laps, playing tennis,* and *fast bicycling.*
- Try your best to perform your activity in "bouts" that are at least 10 minutes long (Example – 3 bouts of 10 minutes each day for a total of 30 minutes of activity).

What about strength training?

- The *2008 Physical Activity Guidelines for Americans* also recommend that you do muscle strengthening exercises two times per week to increase bone strength and muscular fitness.
- Adults should perform 8-12 repetitions of activities that work your large muscle groups, such as the legs, hips, abdomen, back, chest, shoulders, and arms.
- These activities do not require going to a gym. You can use resistance bands, do body weight exercises (push-ups, sit-ups, lunges), carry heavy loads, or do heavy gardening or yardwork.

Getting Started

- Doing both aerobic activity (such as walking or jogging) and muscle strengthening is best for your overall health and fitness. If you are just starting out, begin with aerobic exercise.
- If you are not doing 150 minutes a week of aerobic activity, gradually work toward this goal and remember that "some" is better than "none."
- Similar to the aerobic activity, those who are just beginning should gradually increase their strength training slowly and safely over a longer period of time.
- Design your physical activity program so that it fits your schedule.
- Consider working with a local fitness professional to help you safely achieve your goals.
- Most of all have **FUN** and enjoy being physically active!

Patient 1

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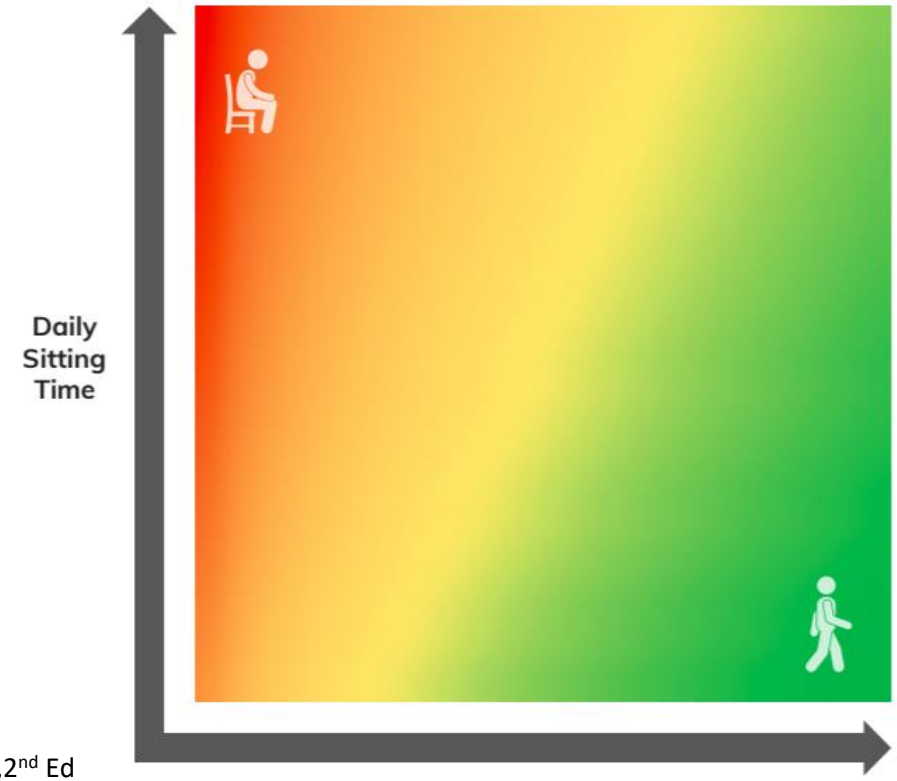
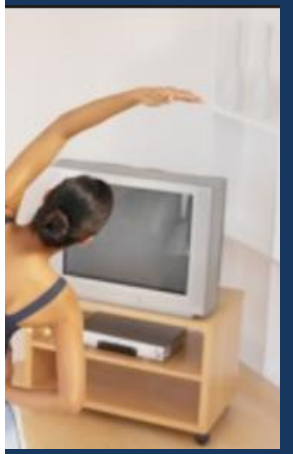
Figure 1-3. Relationship Among Moderate-to-Vigorous Physical Activity, Sitting Time, and Risk of All-Cause Mortality in Adults



Risk of all-cause mortality decreases as one moves from red to green.

HHS PAG,2nd Ed



able

Patient 2

- 58 year old female with DM, HTN, HL, 3 kids, mainly sedentary
- Asymptomatic
- Office job
- Testing: not needed
- Exercise Rx:
  - Intensity: low, walk
  - Frequency: 5x week
  - Duration: 20 minutes
  - Try during lunch break

- Accept that this is below the guidelines but once able to achieve then increase duration or frequency after 3 months

How do we get them there?

- Initial assessment to assess baseline status
- Set achievable activity goals
- Identify barriers
- Talk specifics: exercise dose
- Start small
  - standing, stairs
- Specific interest?
  - yoga, tai chi, etc.

- Benefits do NOT require running marathons

I forgot to post on Facebook I was going to the gym. Now this whole work-out was a waste of time...

Outline

- The Exercise Prescription
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Proven Benefits

Circulation

AHA SCIENTIFIC STATEMENT

Routine Assessment and Promotion of Physical Activity in Healthcare Settings

A Scientific Statement From the American Heart Association

"Physical Activity is comparable or superior to drug interventions in the prevention and management of >40 diseases"

Circ 2018

Olson RD et al. JAMA epub 11/12/2018

Children and Adolescents

Improved bone health (ages 3 through 17 years)

Improved weight status (ages 3 through 17 years)

Improved cardiorespiratory and muscular fitness (ages 6 through 17 years)

Improved cardiometabolic health (ages 6 through 17 years)

Improved cognition (ages 6 to 13 years)

Reduced risk of depression (ages 6 to 13 years)

Adults and Older Adults

Lower risk of all-cause mortality

Lower risk of cardiovascular disease mortality

Lower risk of cardiovascular disease (including heart disease and stroke)

Lower risk of hypertension

Lower risk of type 2 diabetes

Lower risk of adverse blood lipid profile

Lower risk of cancers of the bladder, breast, colon, endometrium, esophagus, kidney, lung, and stomach

Improved cognition

Reduced risk of dementia (including Alzheimer disease)

Improved quality of life

Reduced anxiety

Reduced risk of depression

Improved sleep

Slowed or reduced weight gain

Weight loss, particularly when combined with reduced calorie intake

Prevention of weight regain after initial weight loss

Improved bone health

Improved physical function

Lower risk of falls (older adults)

Lower risk of fall-related injuries (older adults)

Where do we stand?

Figure 1. Percentage of US Adults 18 Years or Older Who Met the Aerobic and Muscle-Strengthening Guidelines, 2008-2016

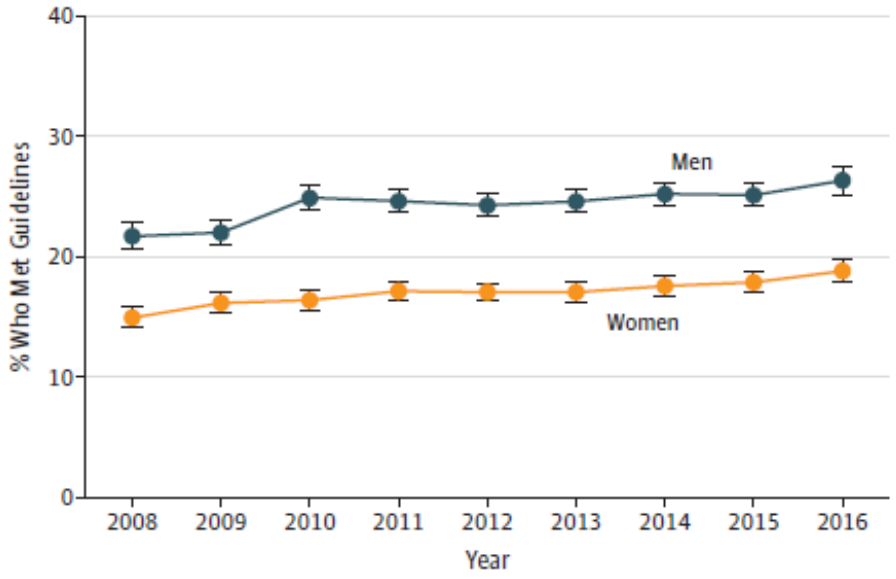
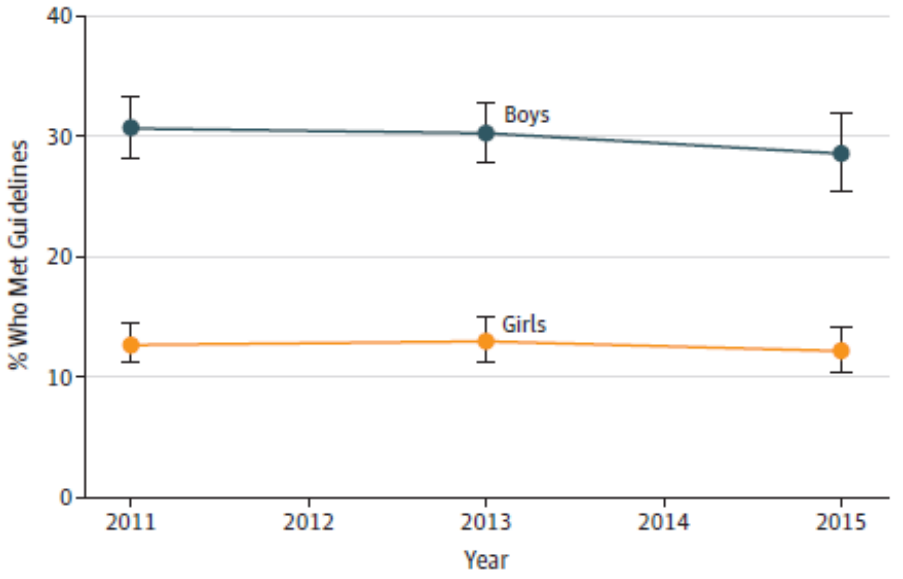
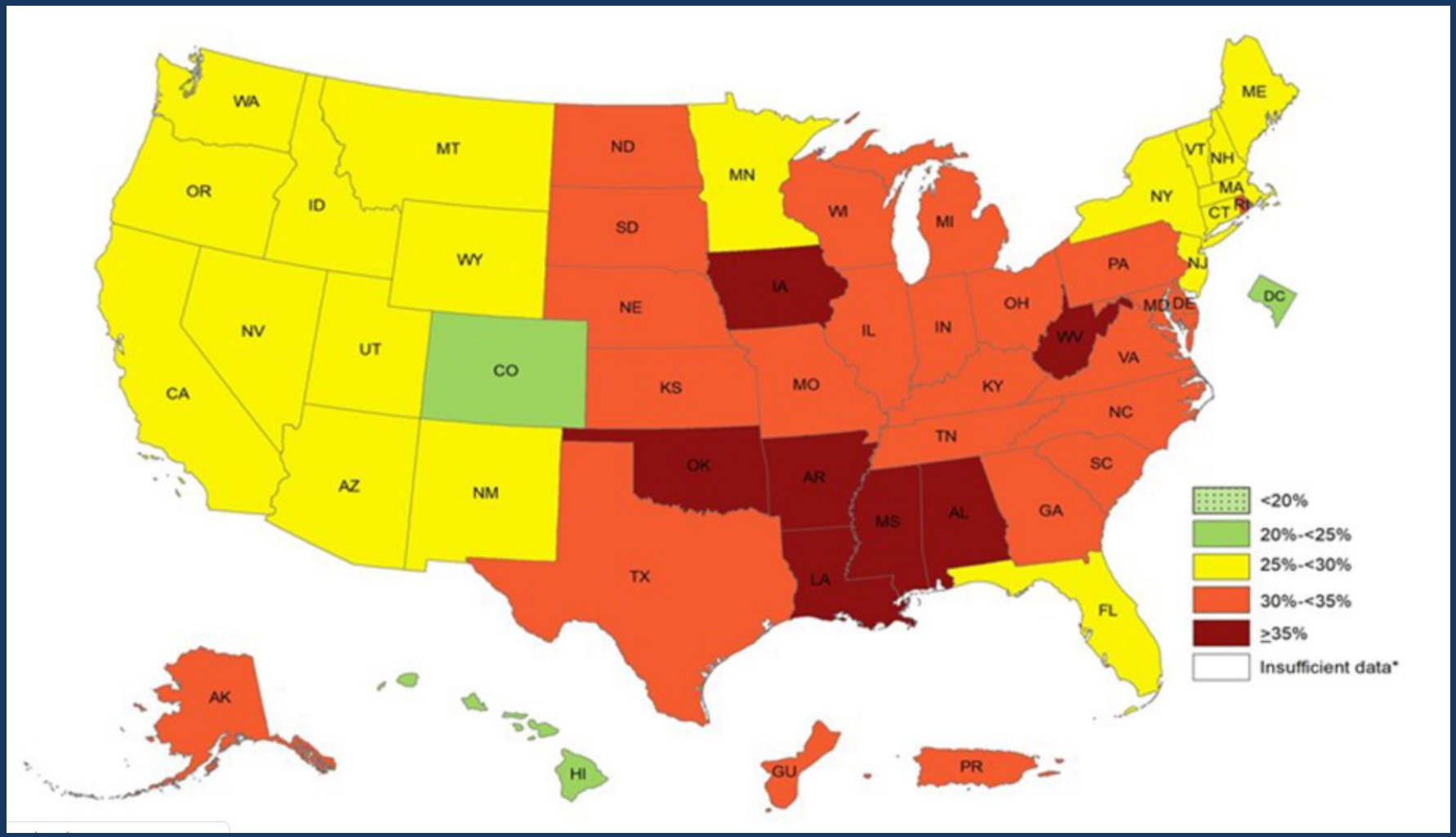


Figure 2. Percentage of US High School Students Who Met the Aerobic Physical Activity and Muscle-Strengthening Guidelines, 2011-2015



Olson RD et al. JAMA epub 11/12/2018

2017 Obesity Prevalence CDC



CDC

JAMA | Special Communication

The Physical Activity Guidelines for Americans

Katrina L. Piercy, PhD, RD; Richard P. Troiano, PhD; Rachel M. Ballard, MD, MPH; Susan A. Carlson, PhD, MPH; Janet E. Fulton, PhD; Deborah A. Galuska, PhD, MPH; Stephanie M. George, PhD, MPH; Richard D. Olson, MD, MPH

- Published 11/12/2018
- Remove barriers
  - No longer recommend doing exercise in 10 min bouts…just do something
- Added recommendations for children < 6 years old

Outline

- The Exercise Prescription
- Why you should prescribe exercise
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Why exercise test at all?

- Vigorous exercise acutely and transiently increases the risk of cardiovascular events in those with occult or known CVD
  - More pronounced in those who do not exercise routinely


AHA SCIENTIFIC STATEMENT

Exercise Standards for Testing and Training

A Scientific Statement From the American Heart Association

Gerald F. Fletcher, Philip A. Ades, Paul Kligfield, Ross Arena, Gary J. Balady, Vera A. Bittner, Lola A. Coke, Jerome L. Fleg, Daniel E. Forman, Thomas C. Gerber, Martha Gulati, Kushal Madan, Jonathan Rhodes, Paul D. Thompson, Mark A. Williams
and on behalf of the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee of the Council on Clinical Cardiology, Council on Nutrition, Physical Activity and Metabolism, Council on Cardiovascular and Stroke Nursing, and Council on Epidemiology and Prevention

- Routine screening of **asymptomatic low-risk younger** individuals is **not** recommended
- Low to moderate* exercise does not require screening
- Exercise testing is indicated before starting vigorous exercise program in asymptomatic people with any of below:
    - DM
    - Men >45
    - Women >55
    - Major coronary risk factors
- Consider in men <45, women <55 asymptomatic
    - Family history SCD, multiple risk factors

*Remember difference between relative and absolute intensity

Fletcher et al. Circulation 2013

Outline

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Athletes with ICDs

Circulation

American Heart Association.

Safety of Sports for Athletes With Implantable Cardioverter-Defibrillators: Long-Term Results of a Prospective Multinational Registry

Rachel Lampert, Brian Olshansky, Hein Heidbuchel, Christine Lawless, Elizabeth Saarel, Michael Ackerman, Hugh Calkins, N.A. Mark Estes, Mark S. Link, Barry J. Maron, Frank Marcus, Melvin Scheinman, Bruce L. Wilkoff, Douglas P. Zipes, Charles I. Berul, Alan Cheng, Luc Jordaens, Ian Law, Michele Loomis, Rik Willems, Cheryl Barth, Karin Broos, Cynthia Brandt, James Dziura, Fangyong Li, Laura Simone, Katleen Vandenberghe and David Cannom

Circulation. 2017;135:2310-2312
doi: 10.1161/CIRCULATIONAHA.117.027828
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Print ISSN: 0009-7322. Online ISSN: 1524-4539

Circulation

American Heart Association.

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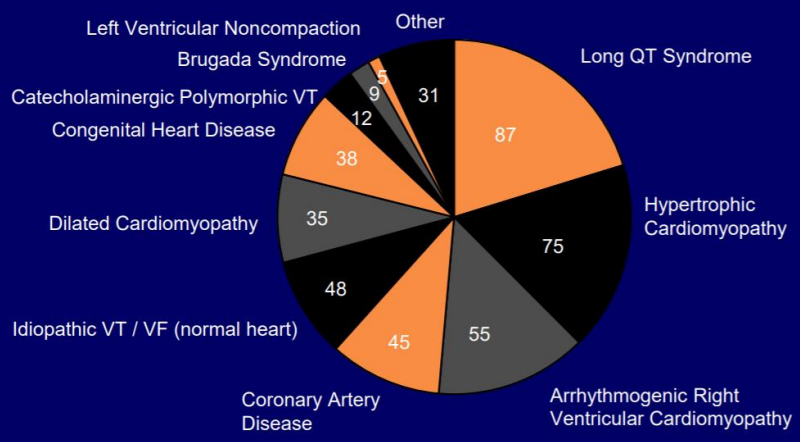
Circulation. 2013;127:2021-2030

Patient Population

N	440
Median follow-up, months	44 (30-48)
Age, years	
10-19	111 (25%)
20-39	161 (36%)
40-60	168 (38%)
Male gender	292 (66%)
Caucasian race	410 (93%)
Time since initial ICD implantation, months	
Ejection fraction, %	60 (50-65)
Taking beta-blocking agents	293 (67%)
ICD indication	
primary prevention	239 (54%)
secondary prevention	201 (46%)

Cardiac Diagnoses



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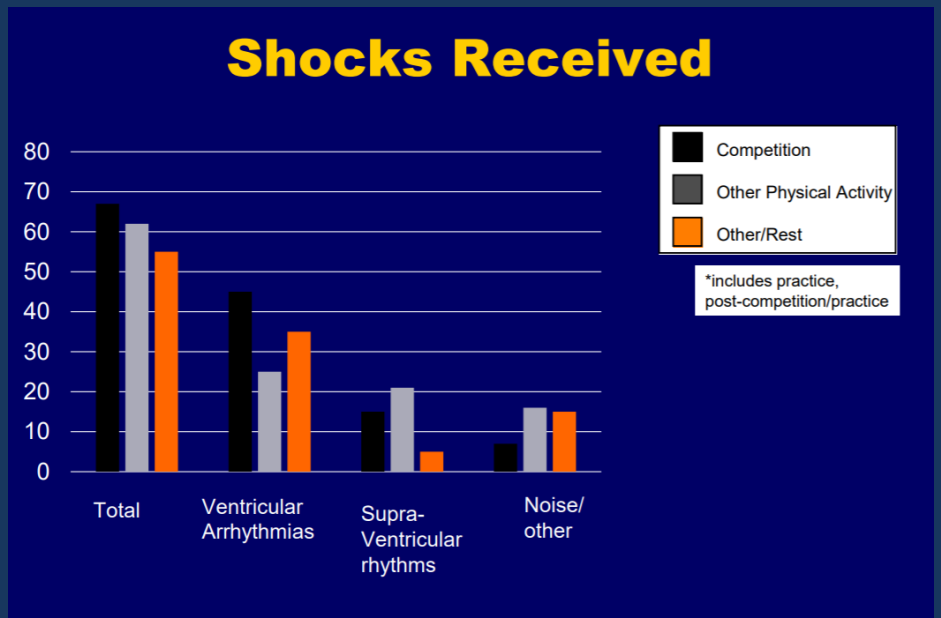
Results

Lifestyle and Exercise in Long QT Syndrome (LIVE-LQTS)

Lifestyle and Exercise in Hypertrophic Cardiomyopathy (LIVE-HCM)

- Tachyarrhythmic death or externally resuscitated tachyarrhythmia during or after sports: 0
- Injury due to arrhythmia or shock during sports: 0



HCM

JAMA | Preliminary Communication

Effect of Moderate-Intensity Exercise Training on Peak Oxygen Consumption in Patients With Hypertrophic Cardiomyopathy
A Randomized Clinical Trial

Sara Saberi, MD, MS; Matthew Wheeler, MD, PhD; Jennifer Bragg-Gresham, MS, PhD; Whitney Hornsby, PhD; Prachi P. Agarwal, MD, MS; Anil Attili, MD; Maryann Concannon, MSW; Annika M. Dries, BA; Yael Shmargad, BS; Heidi Salisbury, RN, MSN, CNS; Suwen Kumar, MBBS; Jonathan J. Herrera, MS; Jonathan Myers, PhD; Adam S. Helms, MD, MS; Euan A. Ashley, FRCP, DPhil; Sharlene M. Day, MD

Catecholamine response to exercise in patients with non-obstructive hypertrophic cardiomyopathy

Athletes with WPW

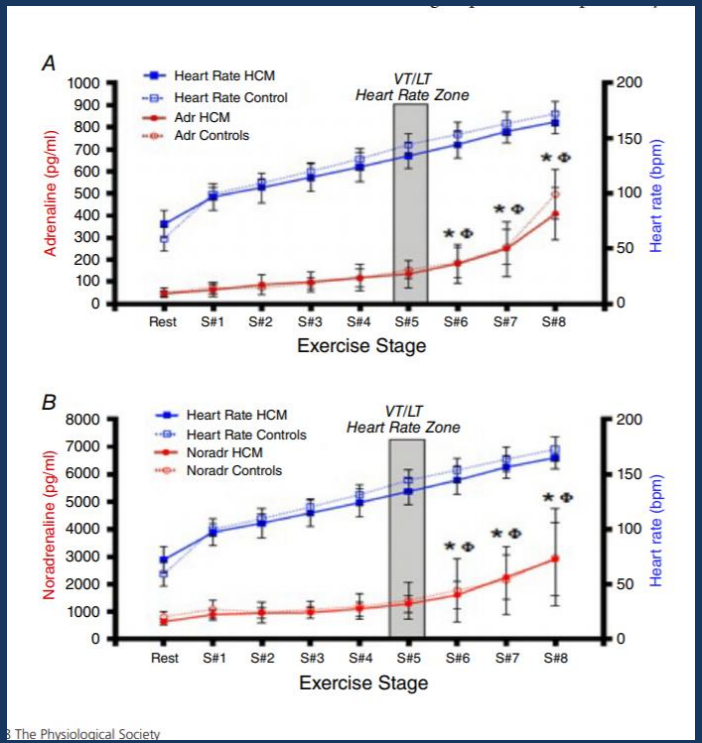
Ankit B. Shah, Mary Z. Bechis, Marcel Brown, Jennifer Michaud Finch, Garrett Loomer, Erich Groezinger, Rory B. Weiner, Meagan M. Wasfy, Michael H. Picard, Michael A. Fifer, Gregory B. Lewis and Aaron L. Baggish

Division of Cardiology, Massachusetts General Hospital, 55 Fruit Street, Yawkey Suite 5B, Boston, MA, USA

Objective: To determine whether moderate-intensity exercise training improves exercise capacity in adults with HCM

16 weeks of training (n=67) vs. usually activity (n=69)

Small improvement in VO2 with no occurences of VA, SCA, appropriate shock or death



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JACC: Clinical EP April 2018

Athletes with WPW

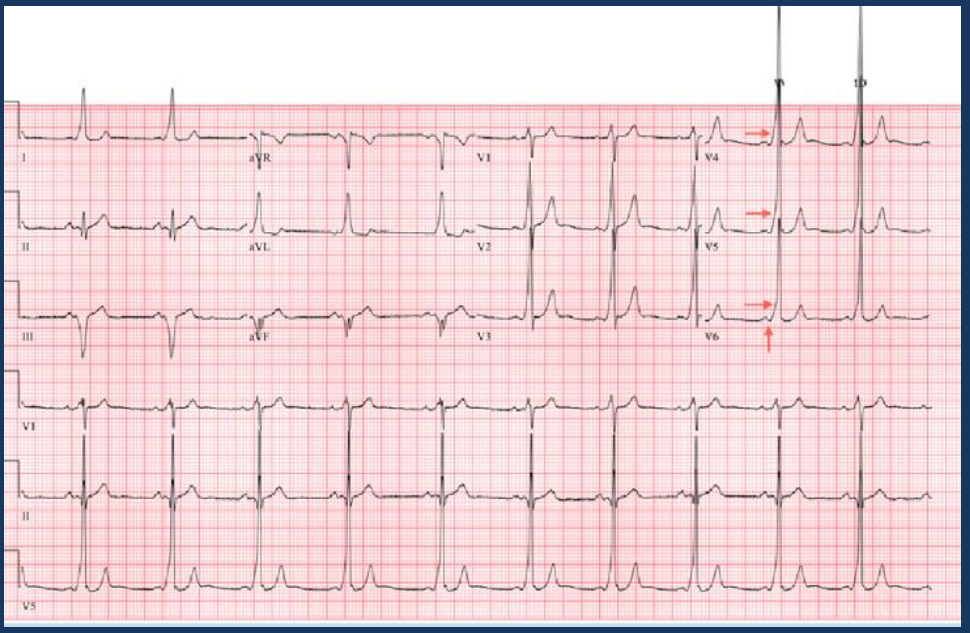
MY APPROACH to the Athlete With Wolff-Parkinson-White Syndrome (WPW)*

Aaron L. Baggish MD and Ankit B. Shah MD, MPH

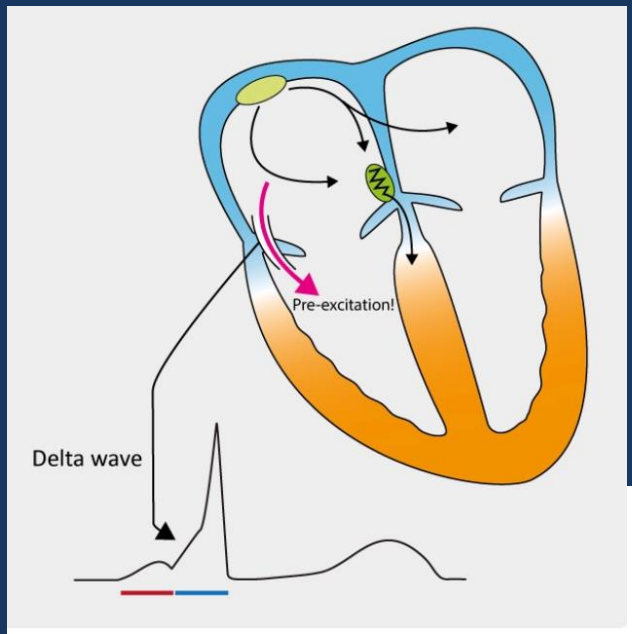
Trends in Cardiovascular Medicine, 2018-02-01, Volume 28, Issue 2, Pages 154-155, Copyright © 2018 Elsevier Inc.

Life-Threatening Event Risk in Children With Wolff-Parkinson-White Syndrome

A Multicenter International Study



Not all intermittent pathways are benign. Young patients may still experience life-threatening event despite low risk findings on stress testing and EP studies.



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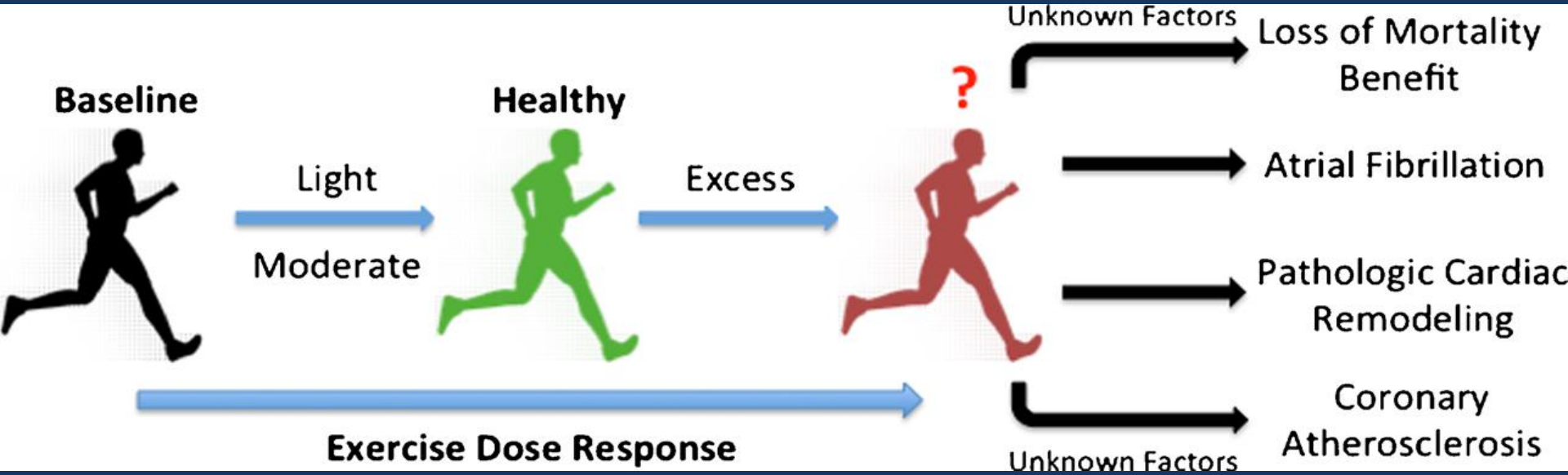
Shared Decision Making

- All involved parties
- Assess risk tolerance
- Ongoing discussions
  - Routine follow up
  - Dynamic
- EAP/AEDs

Shared Decision Making



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Kim et al. Curr Treat Options Cardio Med 2016 18:68

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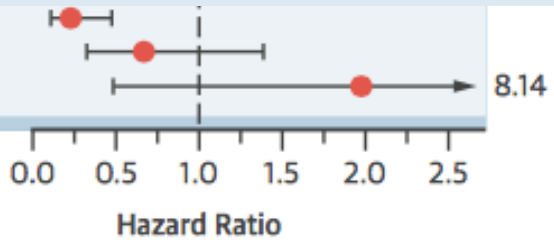
Copenhagen City Heart Study

Strenuous (4% runners) = >7mph, >4hrs/week
HR 1.97, 0.48-8.14

CENTRAL ILLUSTRATION **Dose of Jogging and Long-Term Mortality**

DOSE OF JOGGING	NO. OF PARTICIPANTS	ALL-CAUSE MORTALITY DEATHS	FOREST PLOT
Adjusted for age and sex			
Sedentary nonjogger (reference)	413	128	
Light jogger	570	7	
Moderate jogger	252	8	
Strenuous jogger	36	2	



CONCLUSIONS The findings suggest a U-shaped association between all-cause mortality and dose of jogging as calibrated by pace, quantity, and frequency of jogging. Light and moderate joggers have lower mortality than sedentary nonjoggers, whereas strenuous joggers have a mortality rate not statistically different from that of the sedentary group. (J Am Coll Cardiol 2015;65:411-9) © 2015 by the American College of Cardiology Foundation.

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Schnohr et al. JACC 2015; 65(5):411-9

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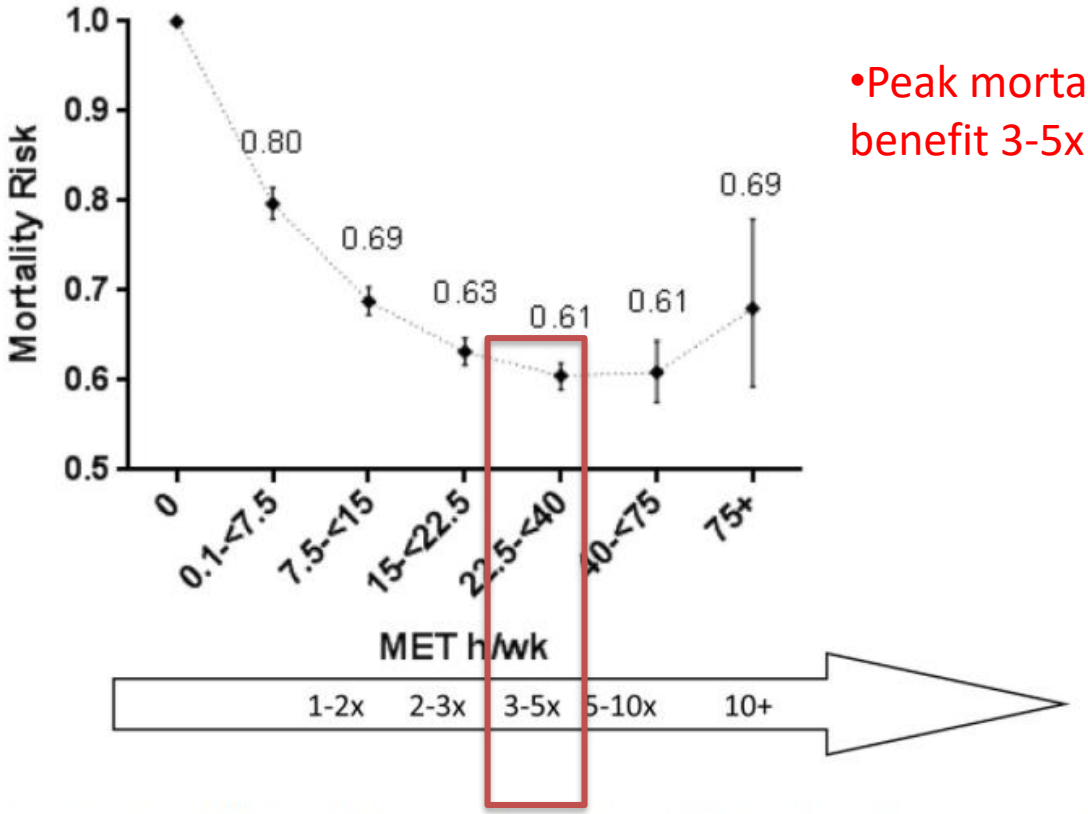
Sweet Spot



•Peak mortality benefit 3-5x

Figure 1. Hazard ratios (HRs) and 95% confidence intervals (CIs) for leisure time moderate- to vigorous-intensity physical activity and mortality[a-c]

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Arem et al. JAMA Intern Med. 2015:175(6):959-967

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Conclusions

- Regular physical exercise is probably our best drug
  - many benefits and is important for healthy aging and chronic disease management
- Should be used in treatment plan for 1° and 2° prevention
- Important to assess each patient's physical activity
- Prescribe exercise and work with patient to identify barriers
- Does not have to be complicated
  - Something is better than nothing
  - Do as much as you can
  - The more you do the better
- Asymptomatic patients doing low to moderate intensity do not need routine exercise testing
- More and more athletes are participating in recreational and competitive sport
- Develop and practice the EAP

Thank you

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