Exercise is Medicine

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Sports Medicine
Oregon Health & Science University
Nov 10, 2023

Objectives

- Case study: Physician exerciser?
- Describe the evidence basis of Exercise as a Medicine
- Assess our own habits as health care providers in meeting minimum exercise requirements
- Learn how to assess and prescribe exercise with our patients

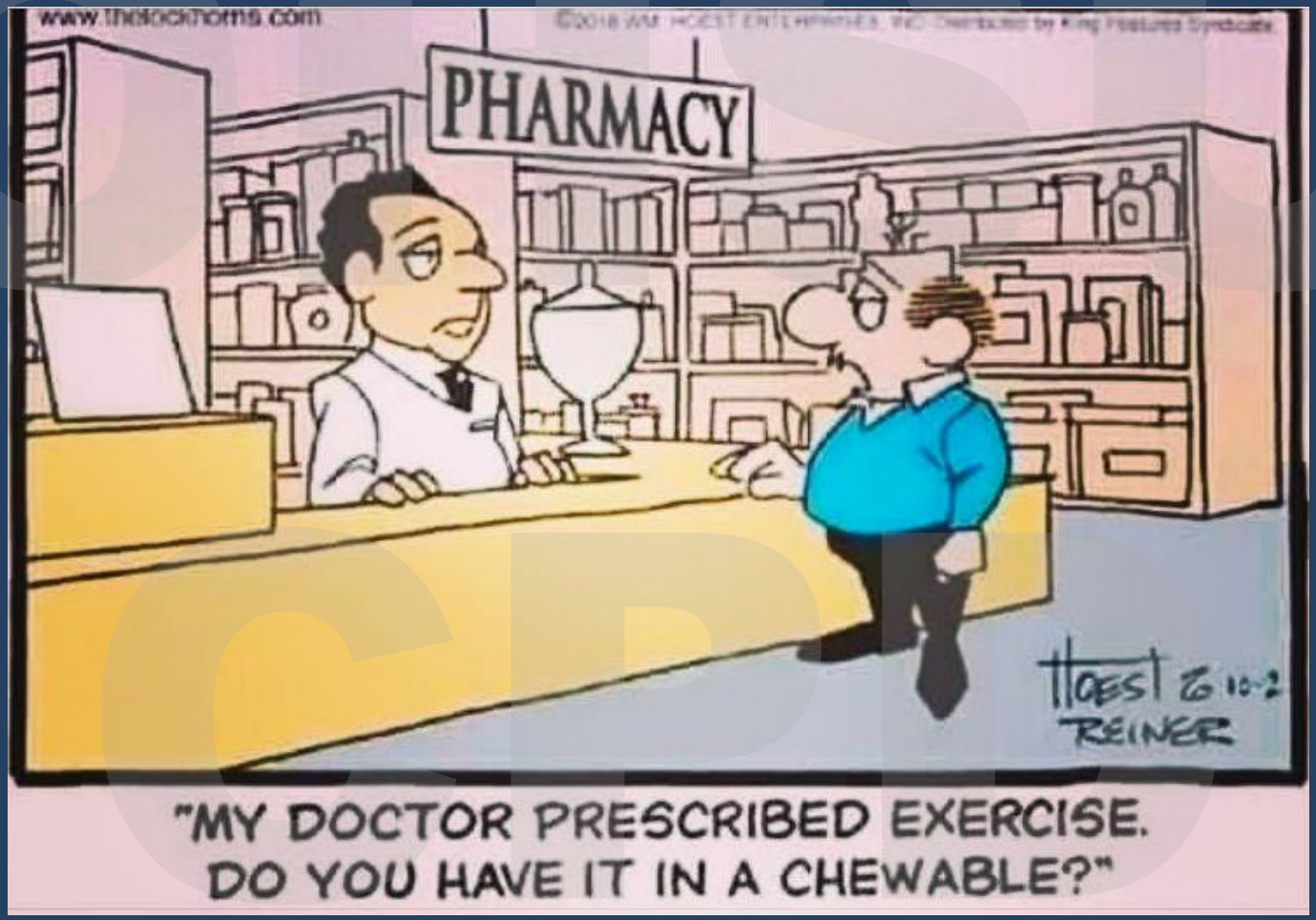
Paradigm Shift

Medicine…

Medicine…

ExeRxcise is Medicine®

AMERICAN COLLEGE of SPORTS MEDICINE



Your Own Exercise Vitals

In the last 2 weeks, on average:

- How many days a week did you get of moderate to strenuous exercise?

  Moderate = brisk walk or more

- On average, how many minutes did you exercise at this level?

Physical Activity Exercise Guidelines

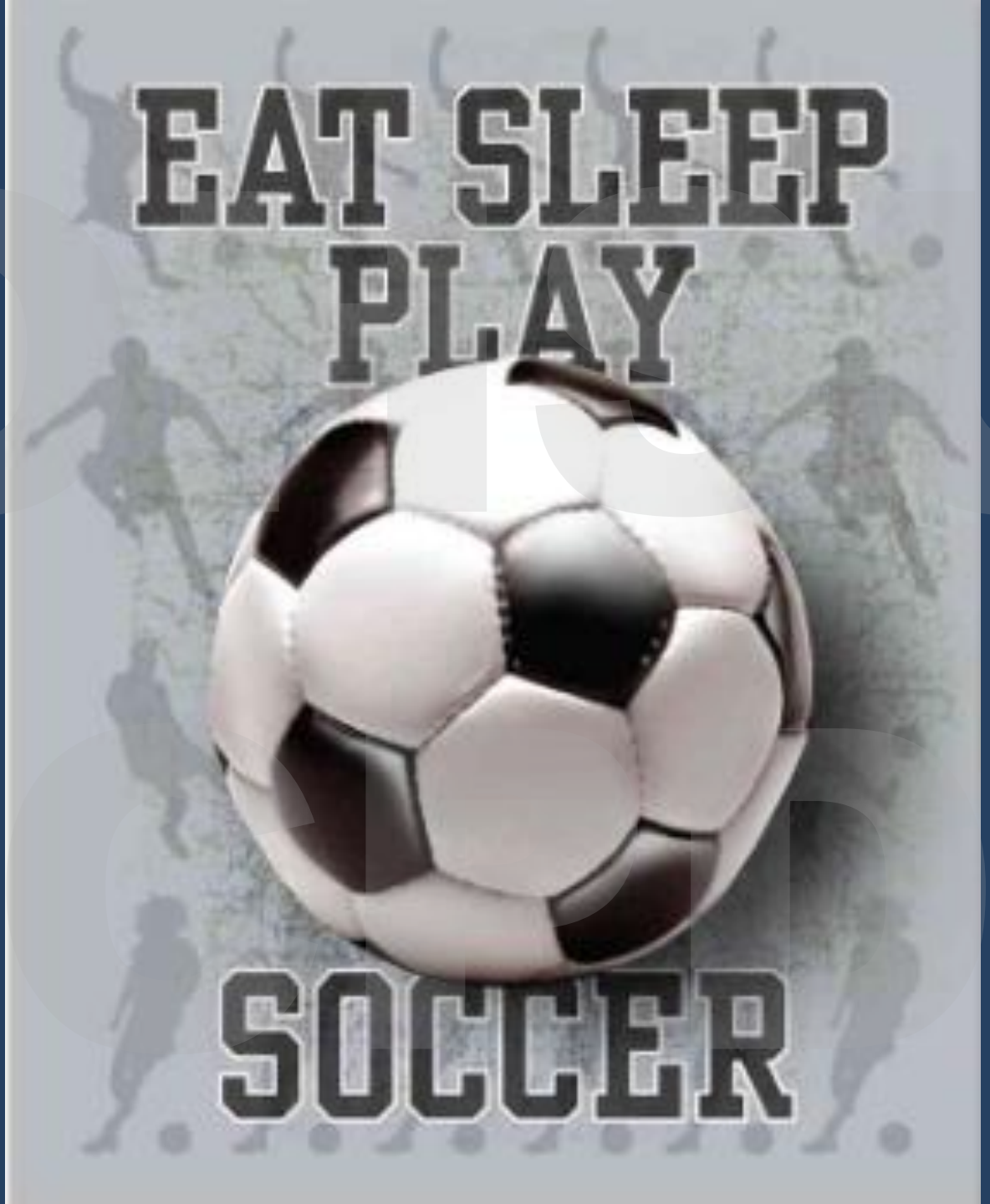
Aerobic Exercise

- **150 - 300 minutes** a week of moderate-intensity
  [30 min brisk walk 5+ days/week]
  » or
- **75 minutes to 150 minutes** a week of vigorous-intensity aerobic physical activity

Strength Training

- 2 or more days a week moderate or greater intensity

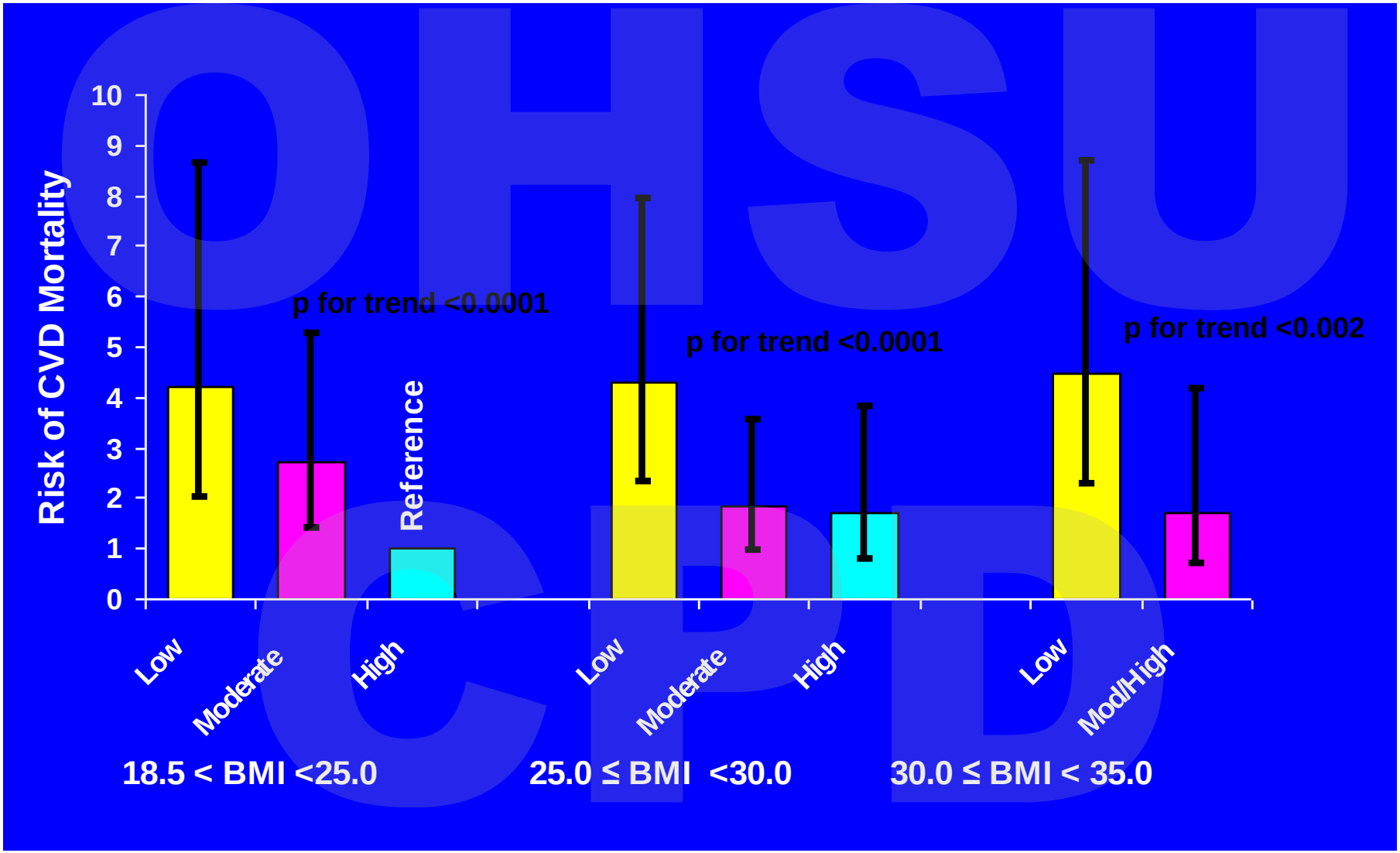
*DECREASING SEDENTARY TIME


EAT SLEEP
PLAY
SOCCER


McDo

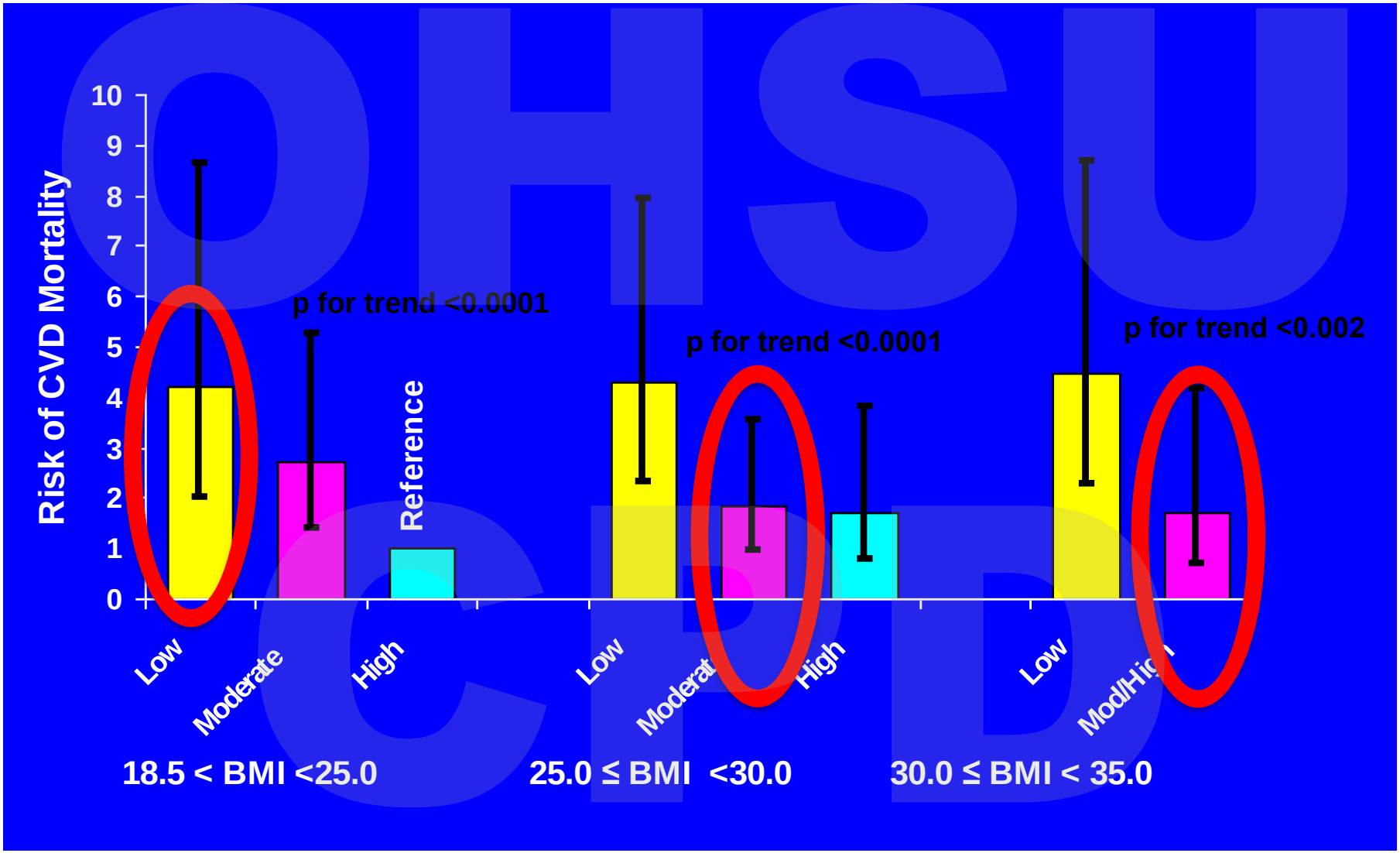

LIPIDS

CVD Mortality Risk* by Fitness and BMI Categories



Church TS et al. *Arch Int Med* 2005; 165:2114. *Blair slides 2012*

NOT ENOUGH TO BE THIN



Church TS et al. *Arch Int Med* 2005; 165:2114. *Blair slides 2012*

Burnout and Physical Activity in Minnesota Internal Medicine Resident Physicians

Shawn M. Olson, MD, MPH
Nnaemeka U. Odo, MD, MPH
Alisa M. Duran, MD, FACP
Anne G. Pereira, MD, MPH, FACP
Jeffrey H. Mandel, MD, MPH

Olsen. J Grad Med Educ. 2014

- Internal Medicine Residents
- 79% ↓ physical activity
- Decreased VO2 max
- Failing to meet physical activity guidelines higher rates of burnout

Overweight Physicians During Residency: A Cross-Sectional and Longitudinal Study

Maya Leventer-Roberts, MD, MPH
Mark R. Zonfrillo, MD, MSCE
Sunkyung Yu, MSc
James D. Dziura, PhD
David M. Spiro, MD, MPH

- Included:
  - Resident physicians (EM, IM, FM, OB/GYN, Peds, Psych, Surgery)
  - PGY1-3

J Grad Med Educ 2006-08

1/2

“sufficient exercise”

BMI ⇧

Self – perception

No Change

Primary Care Provider Exercise Habits

- 28.6% PCPs met minimum physical activity guidelines

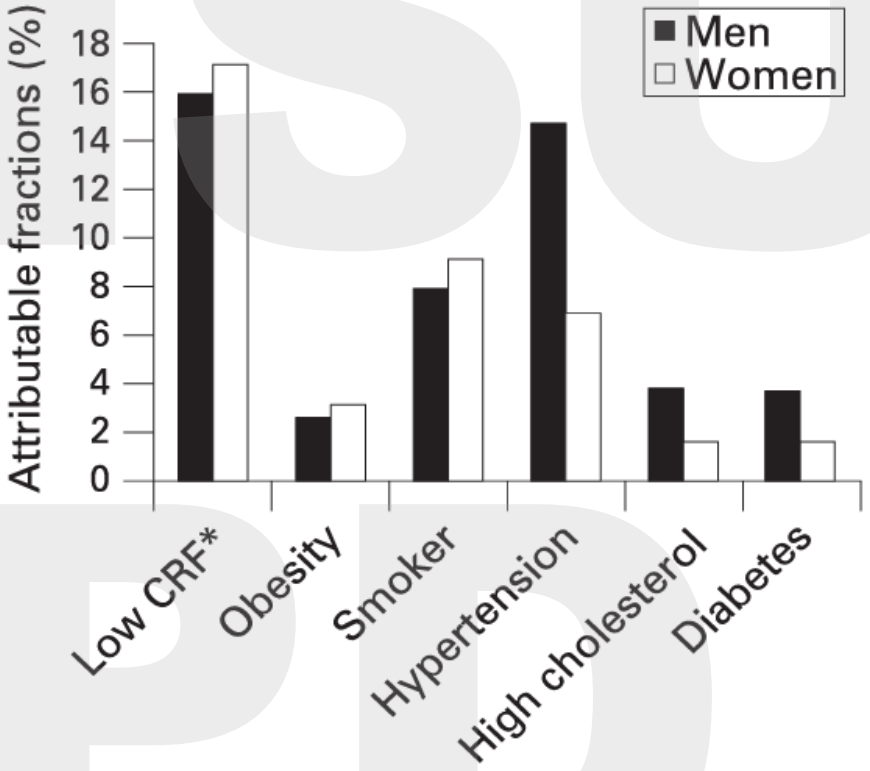
- 23.2% all Americans meet minimum physical activity guidelines

ACSM 2023


VO2 Max Test
Average

Low Fitness may matter the most

Low Cardiorespiratory fitness (CRF) was the leading cause of preventable deaths from all-cause mortality.



BJSM 2009

Physical Activity Modifiable Risk Factor

- Primary Prevention
  - 80% reduction CVD risk
  - 90% reduction type 2 DM risk
  - 33% reduction cancer risk
  - Decreases risk of developing dementia
- Secondary Prevention

***

Sp Med Health Sci 2019

MEDICAL SCIENCE

Can lifestyle changes reverse coronary heart disease?

The Lifestyle Heart Trial

DEAN ORNISH SHIRLEY E. BROWN LARRY W. SCHERWITZ
JAMES H. BILLINGS WILLIAM T. ARMSTRONG THOMAS A. PORTS
SANDRA M. MCLANAHAN RICHARD L. KIRKEEIDE
RICHARD J. BRAND K. LANCE GOULD

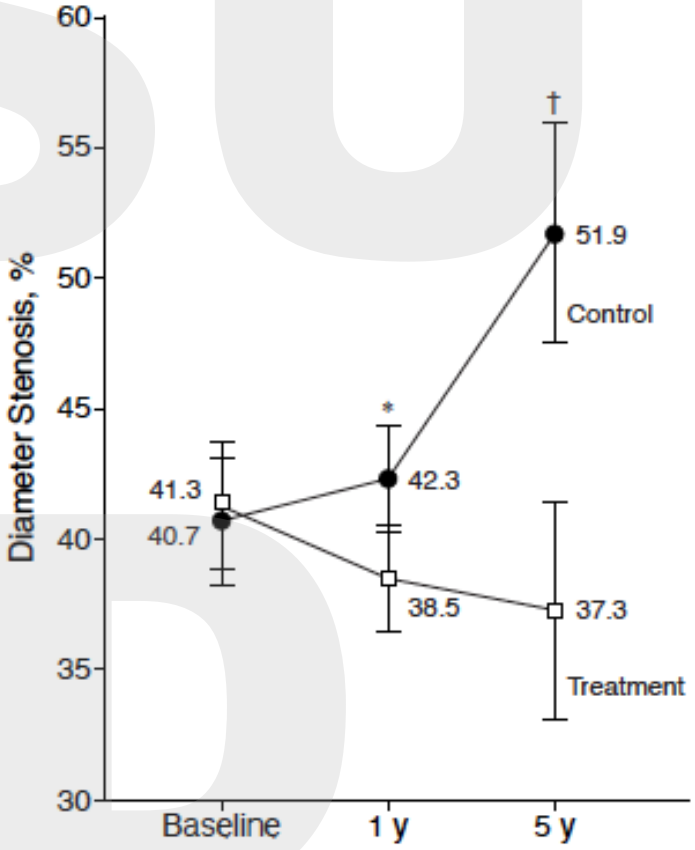
Lancet 1990

The Lancet 1990

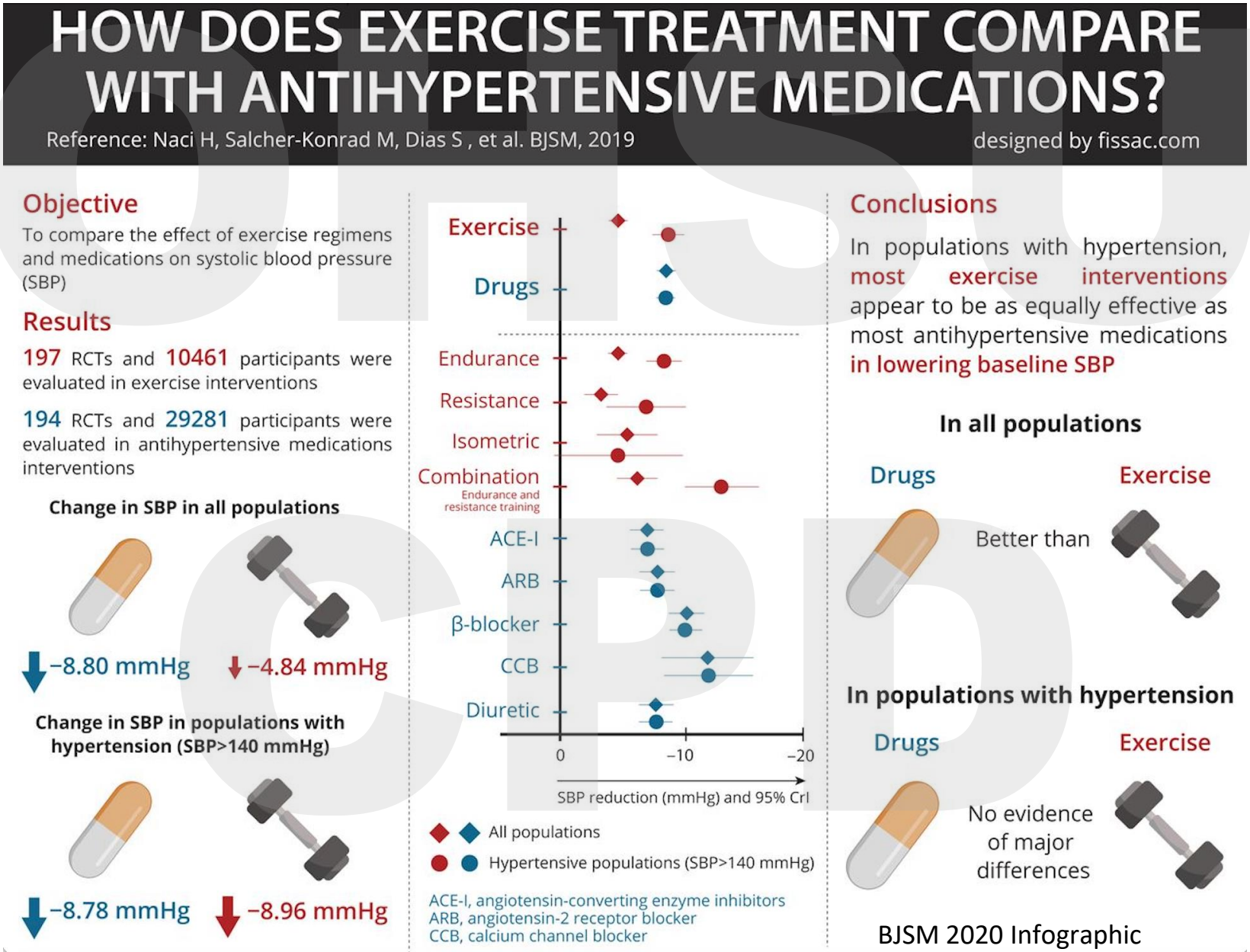
- Patients with angiographically documented CAD were randomly assigned:
- Experimental group:
  - Moderate exercise: 30-minute walk daily
  - Low-fat vegetarian diet
  - Stress management training
  - Tobacco cessation counseling
  - Support group
- Control group

1 year follow up

- Experimental
  - ↓ Angina episodes
  - Angiogram: ↓ Stenosis
- Control
  - Worsening stenosis, cardiac events
- Dose-response: better adherence had better % lesion improvements



Hypertension



BJSM 2020 Infographic

Diabetes

AMERICAN COLLEGE of SPORTS MEDICINE, PRONOUNCEMENT

Exercise/Physical Activity in Individuals with Type 2 Diabetes: A Consensus Statement from the American College of Sports Medicine

JILL A. KANALEY[1], SHERI R. COLBERG[2], MATTHEW H. CORCORAN[3], STEVEN K. MALIN[4], NANCY R. RODRIGUEZ[5], CARLOS J. CRESPO[6], JOHN P. KIRWAN[7], and JULEEN R. ZIERATH[8]

- Regular aerobic exercise lowers HgbA1c 0.5-0.7%
- Small doses of PA (breaking up sedentary time) = improves postprandial glu/insulin levels
- Weight loss (diet + exercise) > 5% = benefits
- Exercise before bariatric surgery improves outcomes

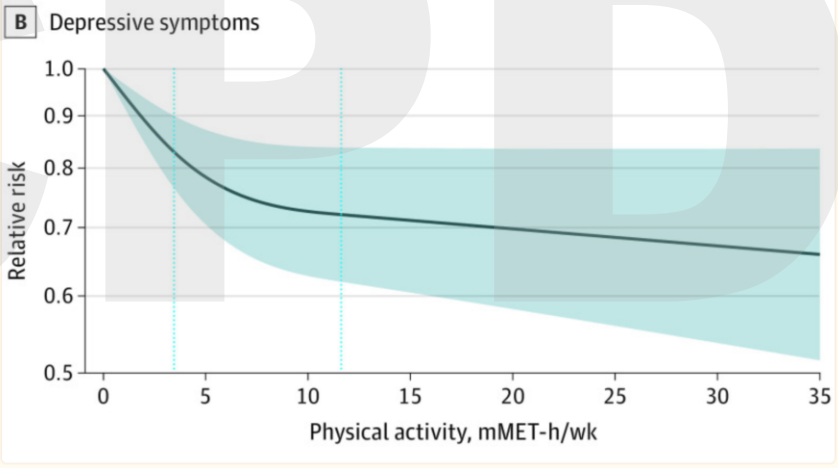
Med Sci Sports Exerc 2022

JAMA Psychiatry | Original Investigation

Association Between Physical Activity and Risk of Depression
A Systematic Review and Meta-analysis

Matthew Pearce, PhD; Leandro Garcia, PhD; Ali Abbas, PhD; Tessa Strain, PhD; Felipe Barreto Schuch, PhD; Rajna Golubic, PhD; Paul Kelly, PhD; Saad Khan, MB,BChir; Mrudula Utukuri, MB,BChir; Yvonne Laird, PhD; Alexander Mok, PhD; Andrea Smith, PhD; Marko Tainio, PhD; Søren Brage, PhD; James Woodcock, PhD

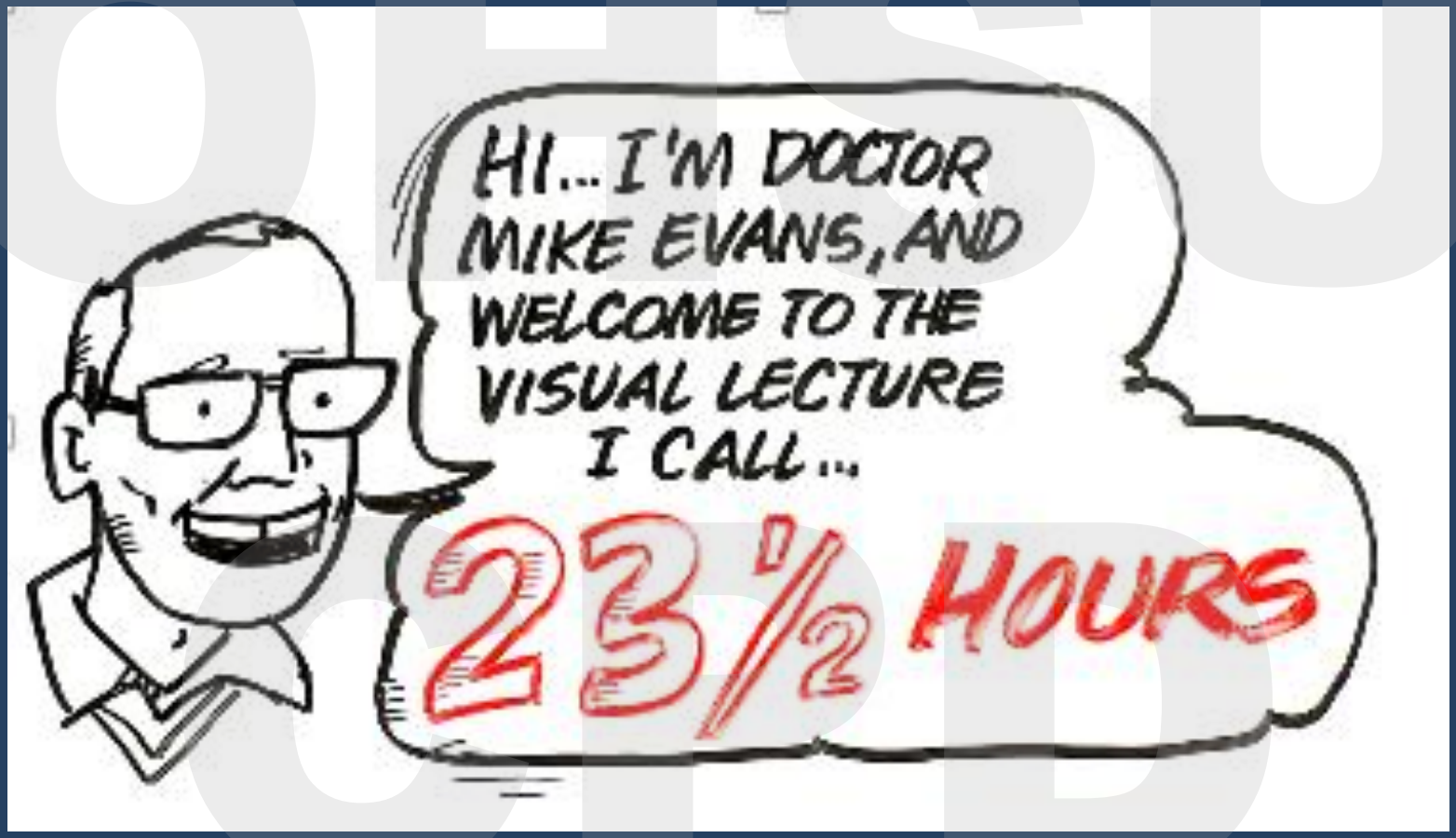
- Depression - leading cause of mental health related disease burden
- Inverse curvilinear dose-response association between PA and depression
- Adults 8.8 met hours (2.5 hrs moderate activity) 25% lower risk of depression
- Significant gain going from sedentary to slightly active



JAMA Psy 2022

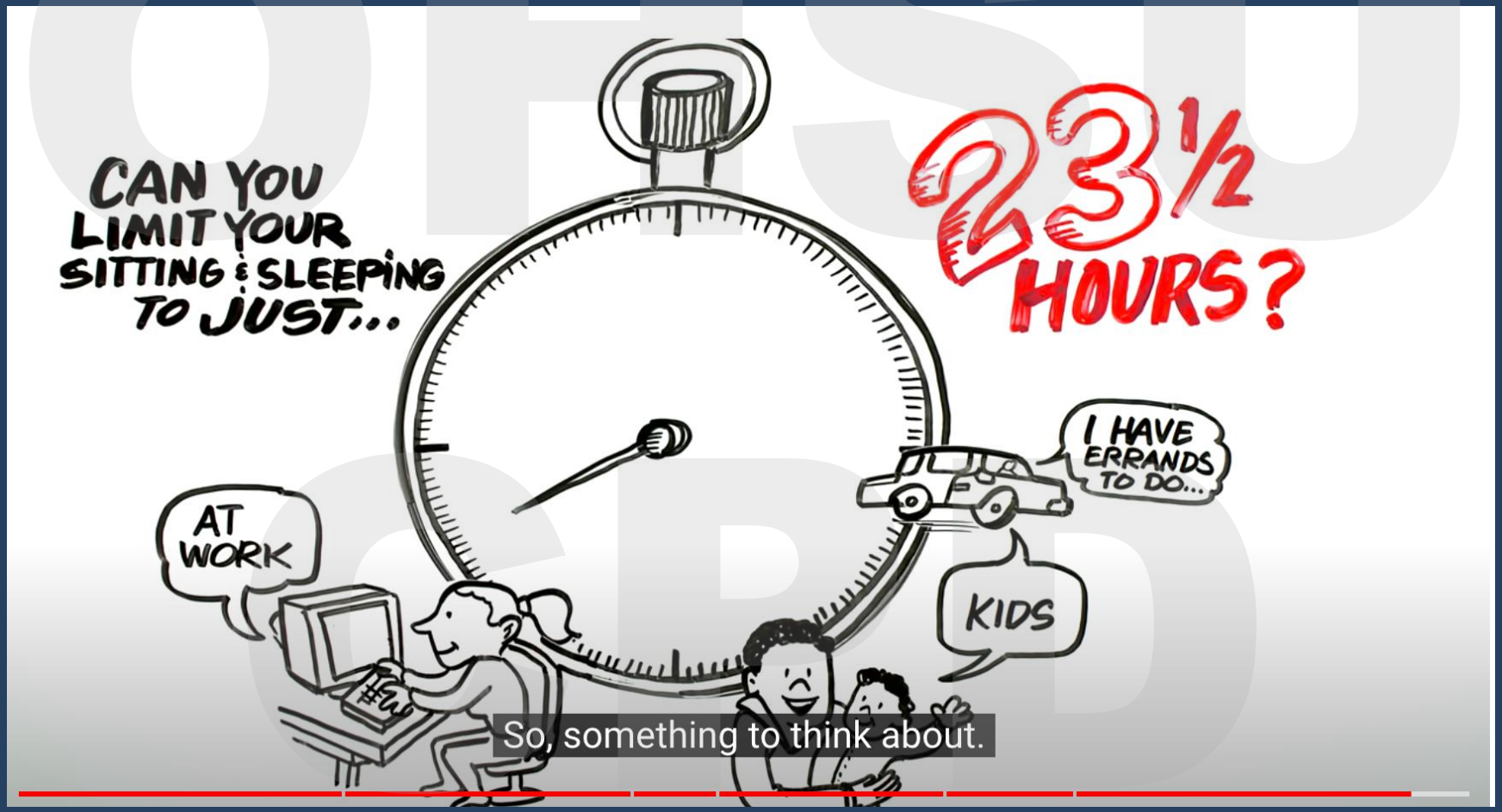
Secondary Prevention

- Cancer mortality rates ↓ 7-17%
- Osteoporosis: ↓ bone fractures
- Infectious disease: ↓ susceptibility to illness
- Infertility (ovulation/pregnancy rates improved in obese women)
- Cognition: improves functional and structural neural properties


HI... I'M DOCTOR MIKE EVANS, AND WELCOME TO THE VISUAL LECTURE I CALL...
23½ HOURS

23 ½ Hour Day

by Mike Evans, MD



OHSU

?

CPD

Paradigm Shift: Solutions

- Fun!
- Commuting (bike/walk; park farther away)
- HIIT training: 7min exercise - repeat; time adds up!
- Participate in competitive events
- Exercise before work
- Exercise with a buddy (or team or child!)
- Do Reading/Studying while exercising
- TV on = exercise time
- Combine activity with children's events and sports
- Talks with family = walk time
- Walk meetings
- Regular exercise times OR Flexible hours to allow exercise at different times of day


OHSU-Doernbecher
EMERGENCY

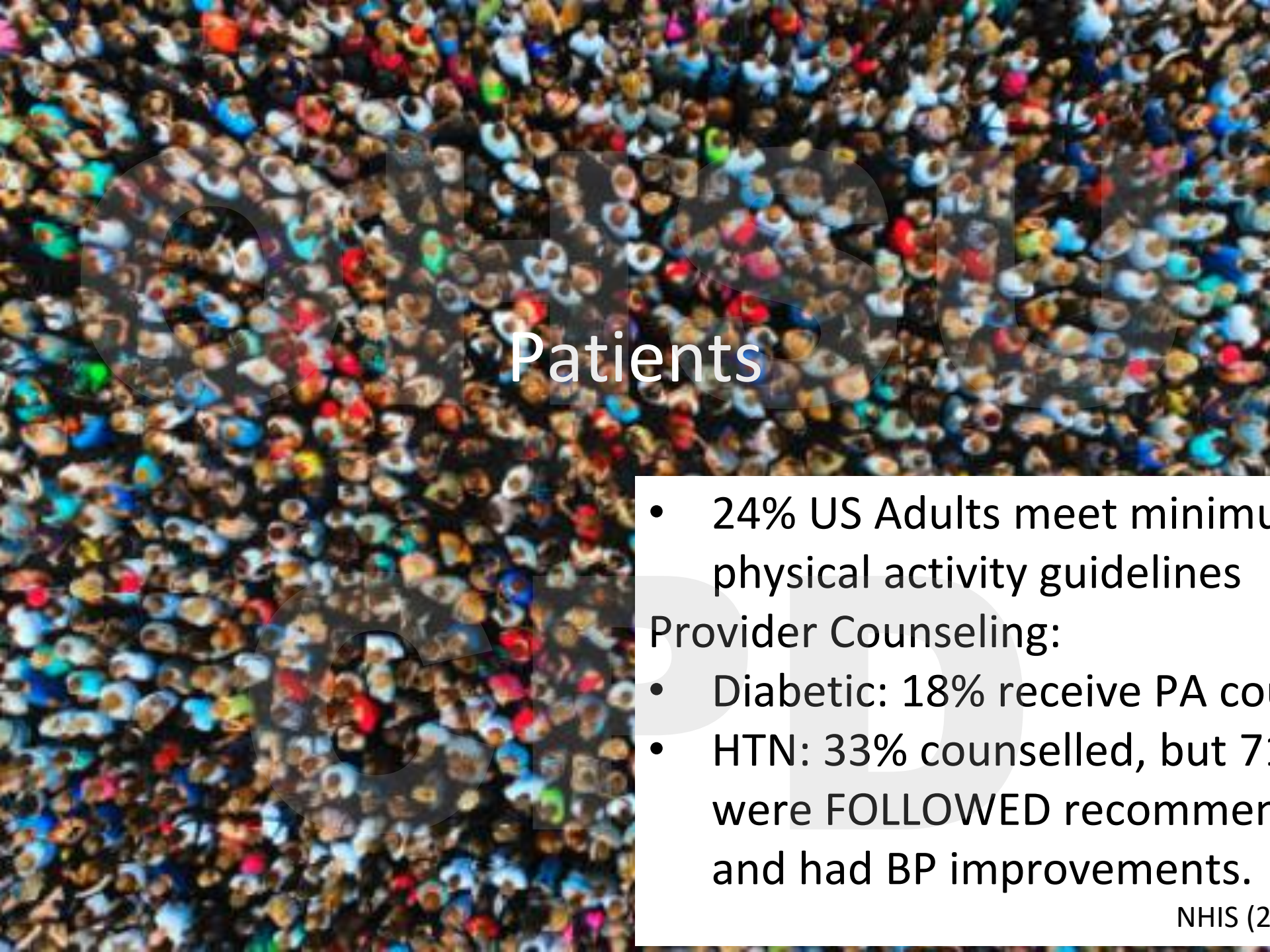

On
The
Cutting
Edge
OHSU

Fitness Improves Surgical Outcomes: A case for pre-habilitation

Author (yr)	Subjects	Surgery/Procedure	Outcomes	Key Results
Beaupre *et al.* (2004)	*N* = 131; 6-wk preoperative exercise program	TKA	SF-36, strength measures, length of stay	Reduced postoperative hospital stay
Arthur *et al.* (2000)	*N* = 249; at least 10-wk prehabilitation	Coronary bypass surgery	Postoperative hospital stay length, HRQOL	Reduced length of hospital stay; reduced length of ICU time; improved QOL pre- and postsurgery
Kim *et al.* (2009)	*N* = 21; 4-wk preoperative exercise program	Colorectal cancer	Exercise capacity, 6MWT	Improved peak power output; improved ventilator efficiency; improved 6MWT
Grant *et al.* (2014)	*N* = 506; preoperative CPET	AAA repair/Endovascular Aneurysm Repair (EVAR)	Mortality, exercise capacity	Improved 3-yr survival; increased exercise capacity; improved ventilatory efficiency
Mayo *et al.* (2011)	*N* = 95; prehabilitation approximately 6 wk	Colorectal surgery	6MWT, HRQOL, exercise capacity	Improved functional capacity; improved recovery responses; and improved QOL
Asoh *et al.* (1981)	*N* = 29; 1- to 3-wk prehabilitation	Abdominal surgery	Postoperative complications and death	Reduced postoperative complications and death
Carli *et al.* (2005)	*N* = 275; variable prehabilitation programs	Abdominal cardiac surgery	Postoperative complications and death, length of stay, HRQOL, functional ability	Reduced postoperative complications and death; reduced length of stay; reduced decline in functional ability; improved QOL
Nagarajan *et al.* (2011)	Meta-analysis	Lung restriction	Exercise capacity, pulmonary function postsurgery	Improved exercise capacity; improved pulmonary function after surgery
Swank *et al.* (2011)	*N* = 71; 4- to 8-wk prehabilitation (resistance, flexibility, step training)	TKA	Leg strength, 6-min walk, 30-s sit-to-stand, time to ascend stairs	Improved strength and function
Barakat *et al.* (2014)	*N* = 20; 6-wk prehabilitation program	AAA repair	CPET	Improved peak $\dot{V}O_2$, computed tomography (CT), exercise time
Myers *et al.* (2013)	*N* = 140; up to 3 yr of exercise training	Pre-surgical AAA	CPET	Improved exercise capacity and $\dot{V}O_2$ at the VT; reduced submaximal heart rate; no change in inflammatory markers or AAA growth
Tew *et al.* (2012)	*N* = 28; 12-wk moderate intensity exercise	Presurgical AAA	CPET; inflammatory markers	Improved the VT; reduced SBP and C-reactive protein

6MWT, 6-min walk test; CPET, cardiopulmonary exercise test; HRQOL, health-related quality of life; QOL, quality of life; SBP, systolic blood pressure.

T J ACSM 2016



Patients

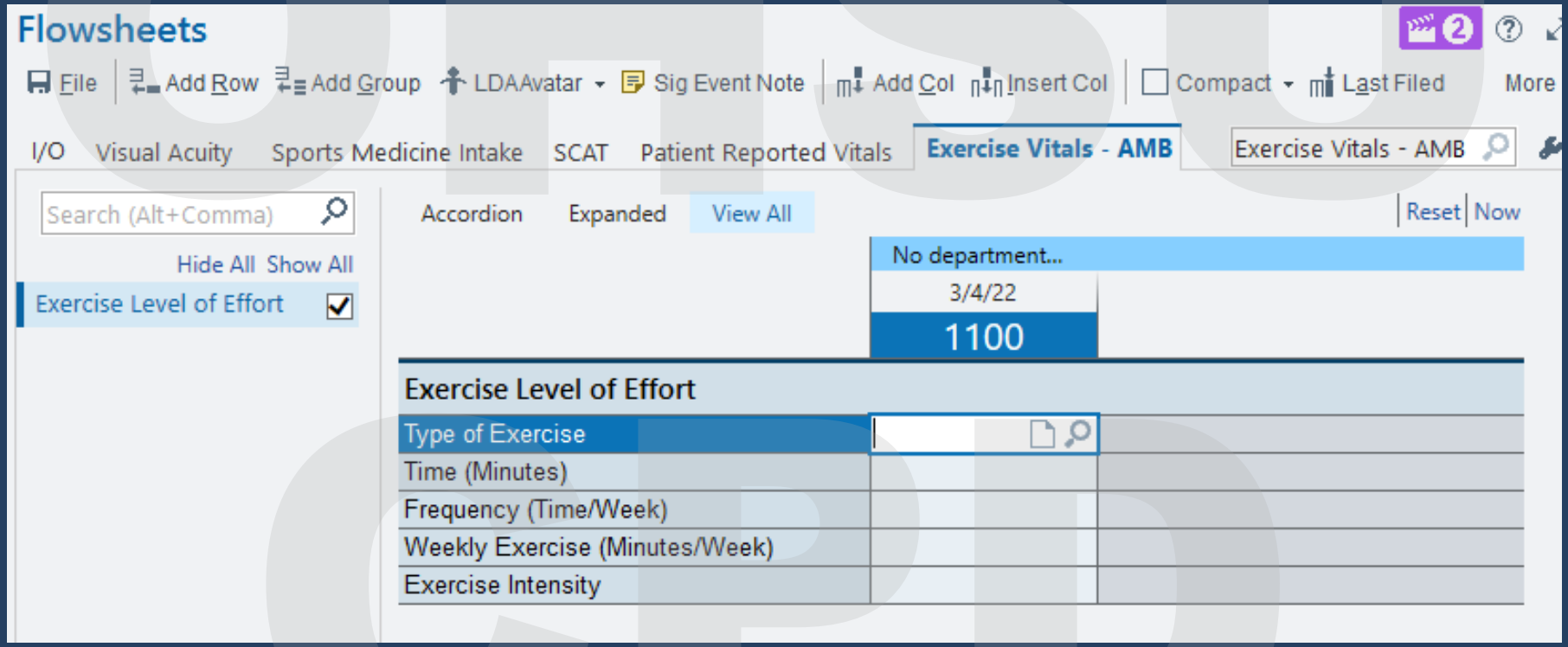
- 24% US Adults meet minimu
  physical activity guidelines

Provider Counseling:

- Diabetic: 18% receive PA co
- HTN: 33% counselled, but 7
  were FOLLOWED recommen
  and had BP improvements.

NHIS (2

Exercise Vital Sign



To pull flowsheet into note: .exercisevitalslast5

Interpret

Minimum 150 minutes/week moderate intensity exercise

- Physically inactive
  - Sedentary
  - Active but not yet meeting minimum guidelines
- Physically active: Meeting/exceeding standard aerobic exercise
  - Need strength training?
  - Encouragement! Future goals?

Motivational Interviewing

- What are your health goals this year?
- What would it mean to you to achieve those?
- How would this change your life for the better?
- What would help you towards meeting those goals?

Writing Exercise Prescription

- What kinds of physical activity or exercise do you do/would you like to do?
- What is something you can include this next week?
- What barriers do you anticipate?
- What have you/could you do to prepare to overcome that barrier?

Writing Exercise Prescription: FITT

- **F**requency (e.g. days/week)
- **I**ntensity (low, moderate, vigorous)
- **T**ype (e.g. walking, biking, running, swimming…)
- **T**ime (minutes/day)

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Name: _____ Date: _____

2018 Physical Activity Guidelines for Adults:

- 150-300 minutes/week of moderate-intensity activity or 75-150 minutes/week of vigorous activity (somewhat hard to very hard) or a combination of both
- Muscle strength training 2 or more times a week

Aerobic Activity *(check)*

Frequency (days/week): ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7

Intensity: ❑ Light (casual walk) ❑ Moderate (brisk walk) ❑ Vigorous (like jogging)

Time (minutes/day): ❑ 10 ❑ 20 ❑ 30 ❑ 40 ❑ 50 ❑ 60 or more

Type: ❑ Walk ❑ Run ❑ Bike ❑ Swim/Water Exercise ❑ Other _____

Steps/day: ❑ 2,500 ❑ 5,000 ❑ 7,000 ❑ 9,000 or more ❑ Other _____

What about aerobic activity?

- Moderate activity is at a pace where you can talk but cannot "sing." Examples: *brisk walking, light biking, water exercise* and *dancing.*
- Vigorous activity is done at a pace where you can't say more than a few words without pausing for a breath. Examples: *jogging, swimming, tennis* and *fast bicycling.*
- You can exercise for any length of time. For example, you might walk:
  - 30 minutes 5 days/week or
  - 20 minutes daily
  - 5 minutes here, 10 minutes there. Just work your way up to 150 total minutes/week.
- Your ultimate goal is to gradually build up to 7,000-9,000 steps/day.

Muscle Strength Training *(check)*

Frequency (days/week): ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7

What about strength training?

- You don't have to go to a gym. Try elastic bands, do body weight exercises (chair sit-to-stands; floor, wall or kitchen counter push-ups; planks or bridges) or lift dumbbells. Heavy work around your home or yard also builds strength.
- Strengthen your legs, back, chest and arms. To start, try 10-15 repetitions using light effort. Build up to medium or hard effort for 8-12 repetitions. Repeat 2-4 times, 2-3 days/week.
- Give yourself a rest day between each strength training session.

Prescriber's Signature: _____

How will you get started **this week?**

Exercise Prescription

To Do:
*

Exercise Prescription (FITT)

		Aerobic Exercise	Strength Exercise
F	Frequency		
I	Intensity		
T	Time		
T	Type		

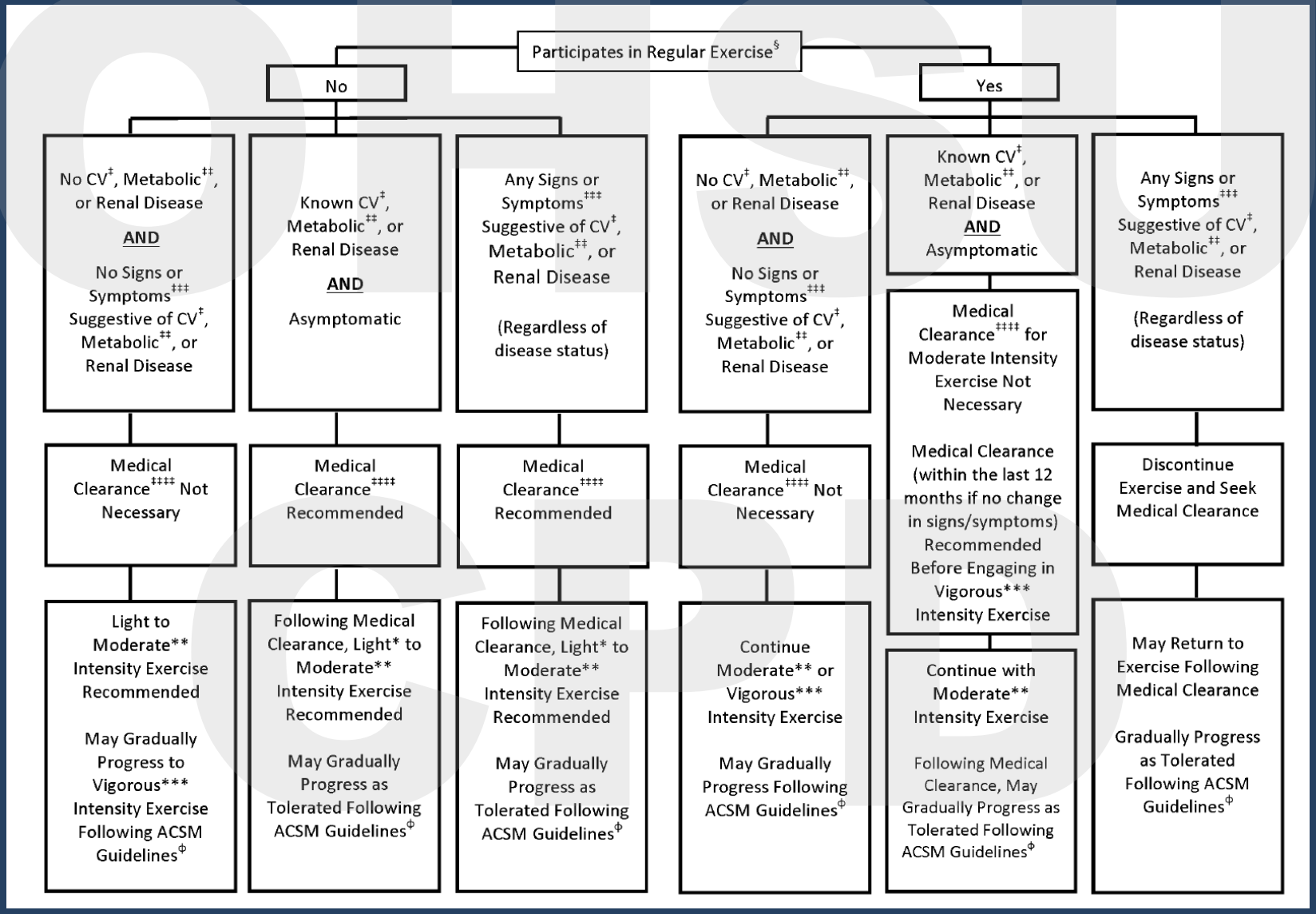
Progression: * 10% time or intensity increase/1-2 weeks


NO PAIN ?
NO GAIN !

Exercise Intensity Gauge: Sing-Talk Test

J Cardiopulm Rehabil Prev 2008
Image: Singapore Active SG

?Barrier: Screening for Exercise



Riebe ACSM 2015

LOW intensity

- Decrease barriers to starting
- Prescribe LOW level of physical activity

Patient walks into your office…

…and is planning on walking out…

Rxn for continued gradual progression of walking!

*

Benefits of WALKING

ONLY 30 MINUTES OF WALKING A DAY...

Resources

YouTube

POPSUGAR. FITNESS

Silver&Fit®
Exercise & Healthy Aging Program

SilverSneakers®
Fitness Program

ANALYTIC REVIEW

Felipe Lobelo, MD, PhD, FAHA, and
Isabel Garcia de Quevedo, MSPH

The Evidence in Support of Physicians and Health Care Providers as Physical Activity Role Models

- Personal physical activity practices contribute POSITIVELY to efficacy and success as a physical activity counselor
- Aerobic
- Strength training
- Both

Write your own Exercise Prescription

To Do:

*

Exercise Prescription (FITT)

		Aerobic Exercise	Strength Exercise
F	Frequency		
I	Intensity		
T	Time		
T	Type		

Resources

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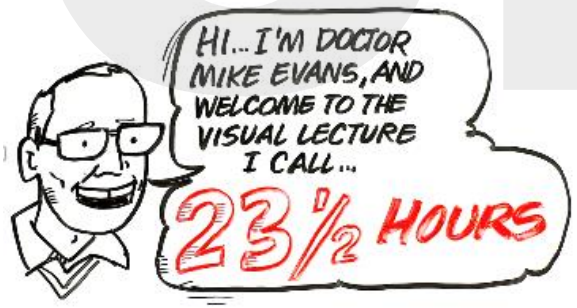

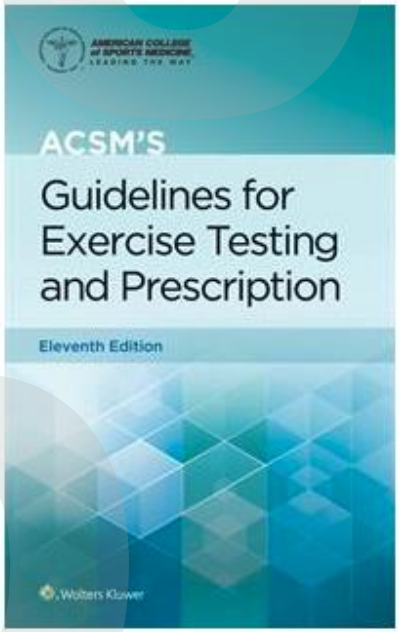

AMERICAN COLLEGE OF Lifestyle Medicine