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7-31-2020

## Introduction to Exercise is Medicine

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Howie, E. (2020). Introduction to Exercise is Medicine. *Diet, Food, Exercise, and Nutrition (D-FEND)*.

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# Exercise is Medicine

DFEND 2.0

July 31, 2020

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# Learning Objectives

1. Define physical activity and exercise
2. Understand the benefits of physical activity and why exercise is medicine
3. Identify the US Physical Activity Guidelines
4. Define the importance of healthy physical activity during the COVID-19 pandemic

# Source for information

- US National Physical Activity Guidelines
  - <https://health.gov/our-work/physical-activity/about-physical-activity-guidelines>
- 2008 & 2018 Physical Activity Guidelines Advisory Committee Reports
  - <https://health.gov/our-work/physical-activity/previous-guidelines/2008-physical-activity-guidelines/advisory-report>
  - <https://health.gov/our-work/physical-activity/current-guidelines/scientific-report>
- Dr. Robert Sallis, MD, Exercise is Medicine
  - <https://publichealth.llu.edu/sites/publichealth.llu.edu/files/docs/healthy-people/2015/sallis.pdf>



# Definitions

**Physical activity** – any bodily movement produced by contraction of muscles that results in a substantial increase in caloric requirements

**Exercise** – PA that is planned, structured, and repetitive for the purpose of conditioning any part of the body

**Fitness** – the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits and to meet unforeseen emergencies

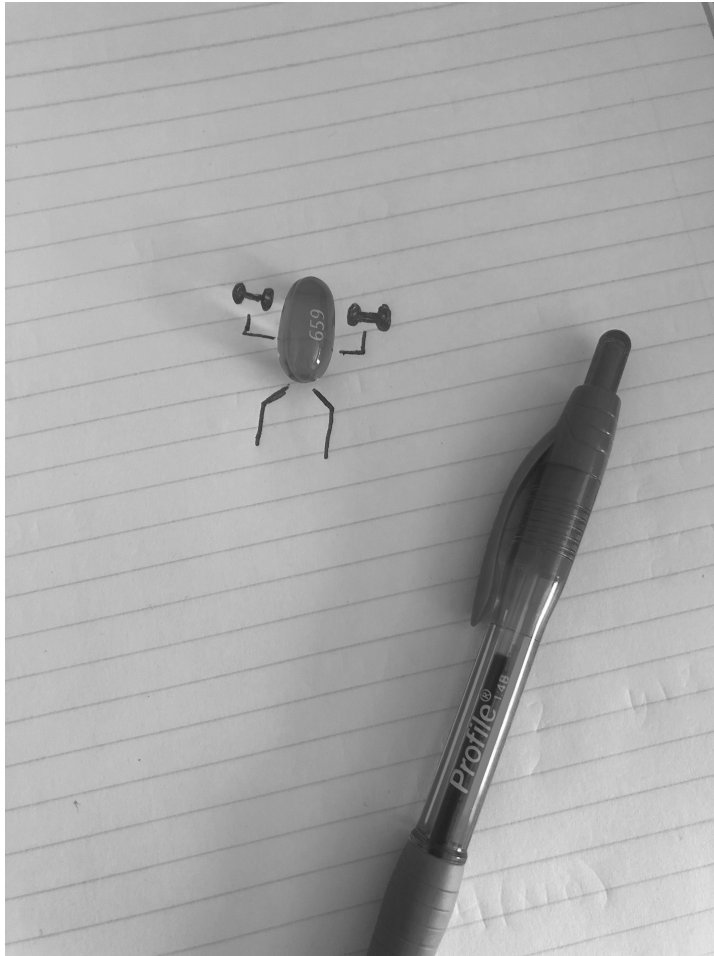
# THE LANCET

Physical Activity - July, 2012

www.thelancet.com



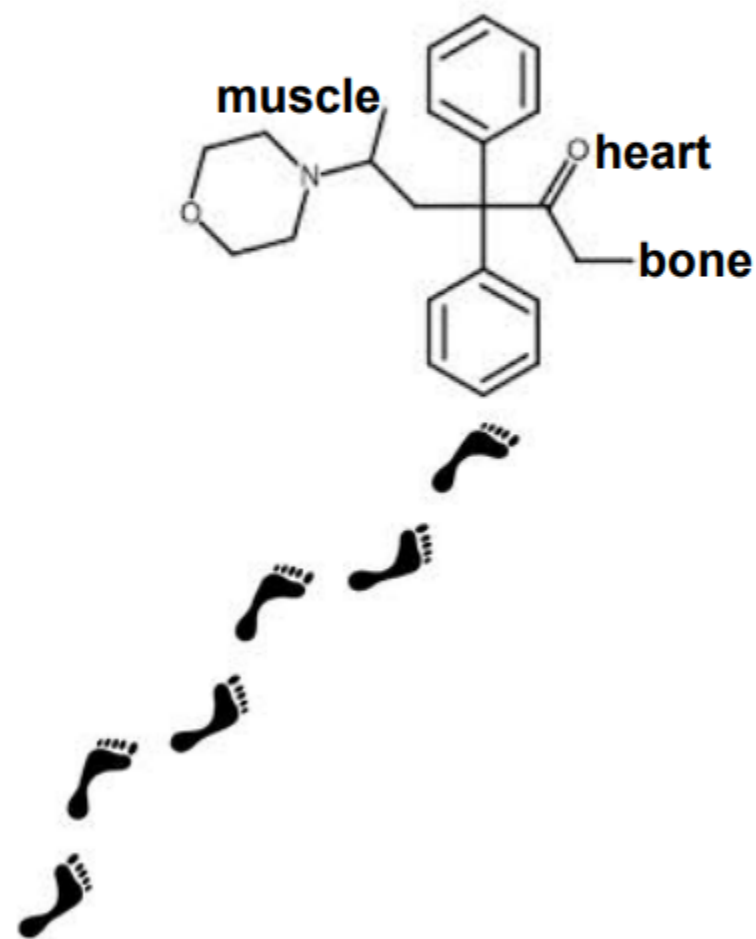
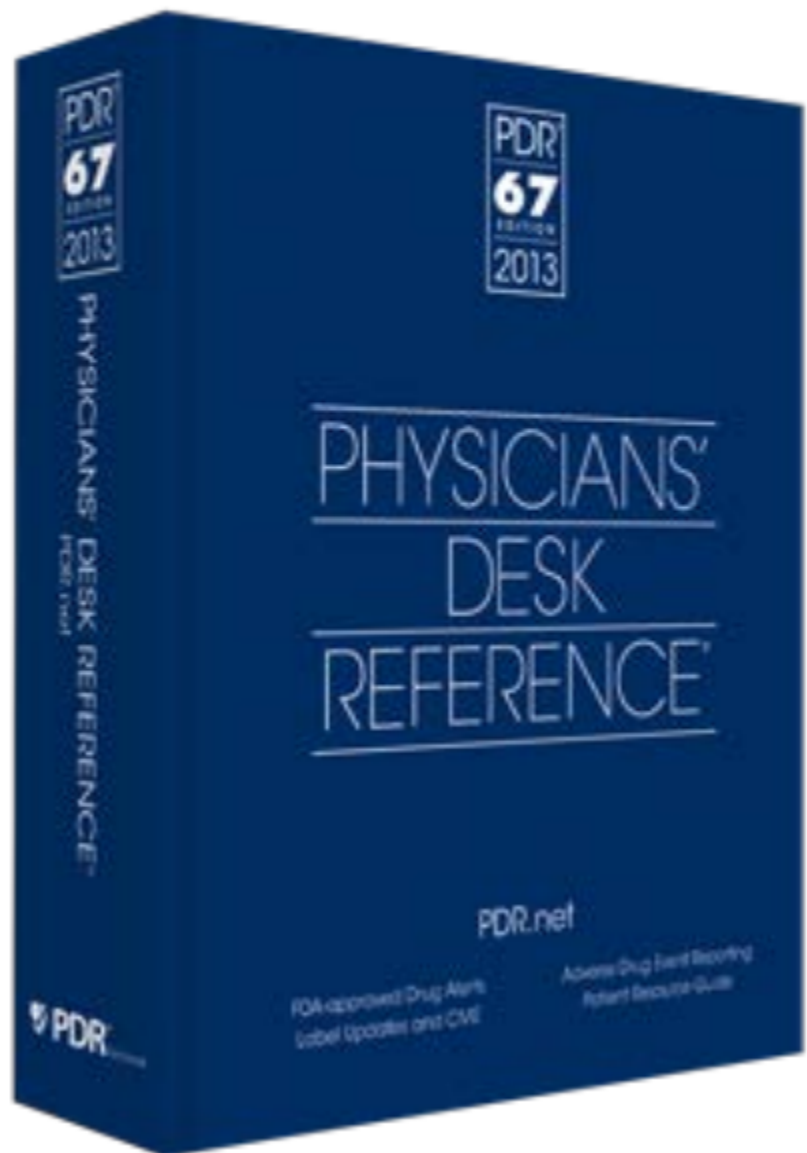
“In view of the prevalence, global reach and health effect of physical inactivity, the issue should be appropriately described as **pandemic**, with far-reaching health, economic, environmental and social consequences.”



“If exercise could be packaged in a pill, it would be the single most widely prescribed and beneficial medicine in the nation.”

-Robert Butler, National Institute on Aging

# A Drug Called Exercise



# A Drug Called Exercise

- **Generic name:** physical activity
- **Other Brand names:** walking, jogging, hiking, rolling, swimming, aerobics, biking, tennis, basketball, soccer, dancing, gardening, etc.
- **Dosage:** optimum 150 minutes per week in adults; 60 min per day in children has proven efficacy. Even low doses have been shown to have benefit. Advise to start with low dose and advance as tolerated.
- **Pregnancy and Lactation:** completely safe. Good for mother and baby.



# A Drug Called Exercise

## ■ Indications and Usage:

- Prevent obesity and mitigate its risks
- Reduce development and improve management of diabetes
- Prevent and treat heart disease
- Lower risk of cancer (breast and colon)
- Treatment of hypertension
- Prevent osteoporosis and fractures
- Manage depression and anxiety
- Reduce risk of dementia
- Recreational uses
- Decrease risk of premature death





# A Drug Called Exercise

- **Side effects:** decreased BP, pulse and blood sugar; stronger muscles & bones, weight loss; improved mood, confidence, self esteem and concentration; Bowel & sleep habits improved; Look & feel better.
- **Adverse Reactions:** sweating, injury (overdose), sudden death (extremely rare).
- **Administration:** self administer or with others. Start off slowly, add minutes and intensity PRN. Change formulations to decrease boredom & improve compliance. Take outdoors or indoors any time of day.





# 2018 Physical Activity Guidelines Advisory Committee Scientific Report

To the Secretary of Health and Human  
Services





## Cardiometabolic Conditions

↓ cardiovascular incidence  
& mortality  
↓ hypertension  
↓ type 2 diabetes

## Weight Status

Weight loss  
Prevention of weight regain  
↓ excessive weight gain

## Older Adults

↓ falls  
↓ fall-related injuries  
↑ physical function

## Cancer

↓ breast cancer  
↓ colon cancer  
↓ bladder, endometrium,  
esophagus, kidney, stomach,  
lung cancers

## Brain Health

↑ cognitive function  
↓ depression  
↓ dementia risk  
↓ anxiety  
↑ quality of life  
↑ sleep

## Children

↑ fitness  
↑ bone health  
↑ cardiovascular risk  
↑ weight status & adiposity  
↓ depression  
↑ cognitive function

## Osteoarthritis

↓ pain  
Improved function  
& QOL

## Hypertension

↓ CVD  
↓ risk of  
progression

## Type 2 Diabetes

↓ CVD  
↓ risk of  
progression

## Multiple Sclerosis

↑ walking  
↑ physical fitness

## Dementia

↑ cognition

# Cardiometabolic Health



Cut your  
type 2 diabetes  
risk in

**HALF**

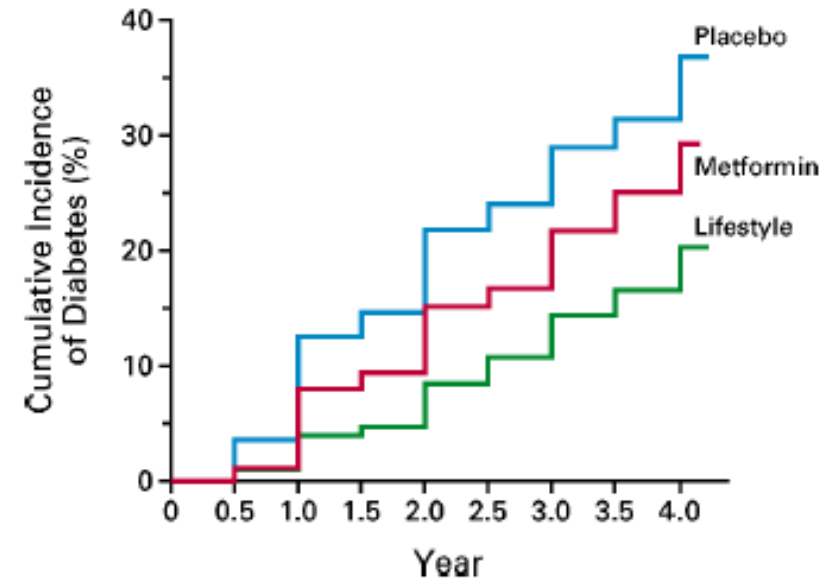


Figure 2.

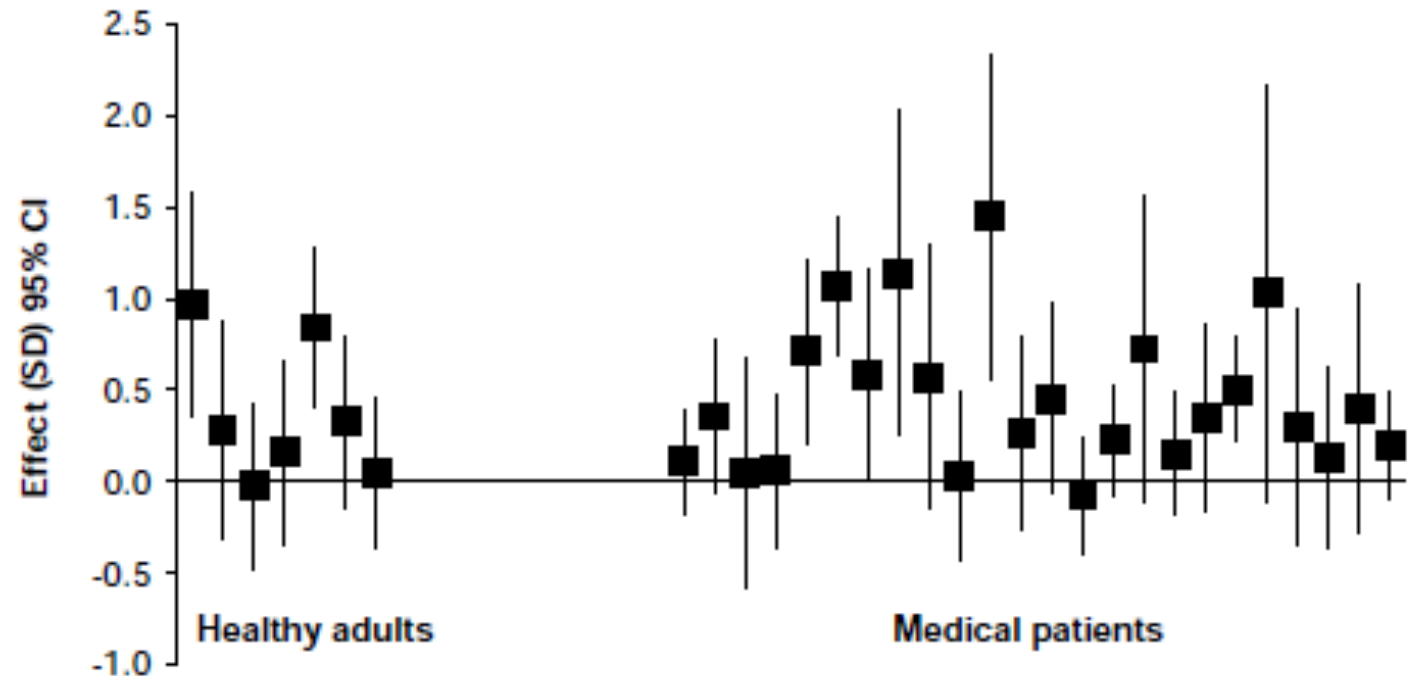
Cumulative Incidence of Diabetes According to Study Group.

The diagnosis of diabetes was based on the criteria of the American Diabetes Association. The incidence of diabetes differed significantly among the three groups ( $P < 0.001$  for each comparison).

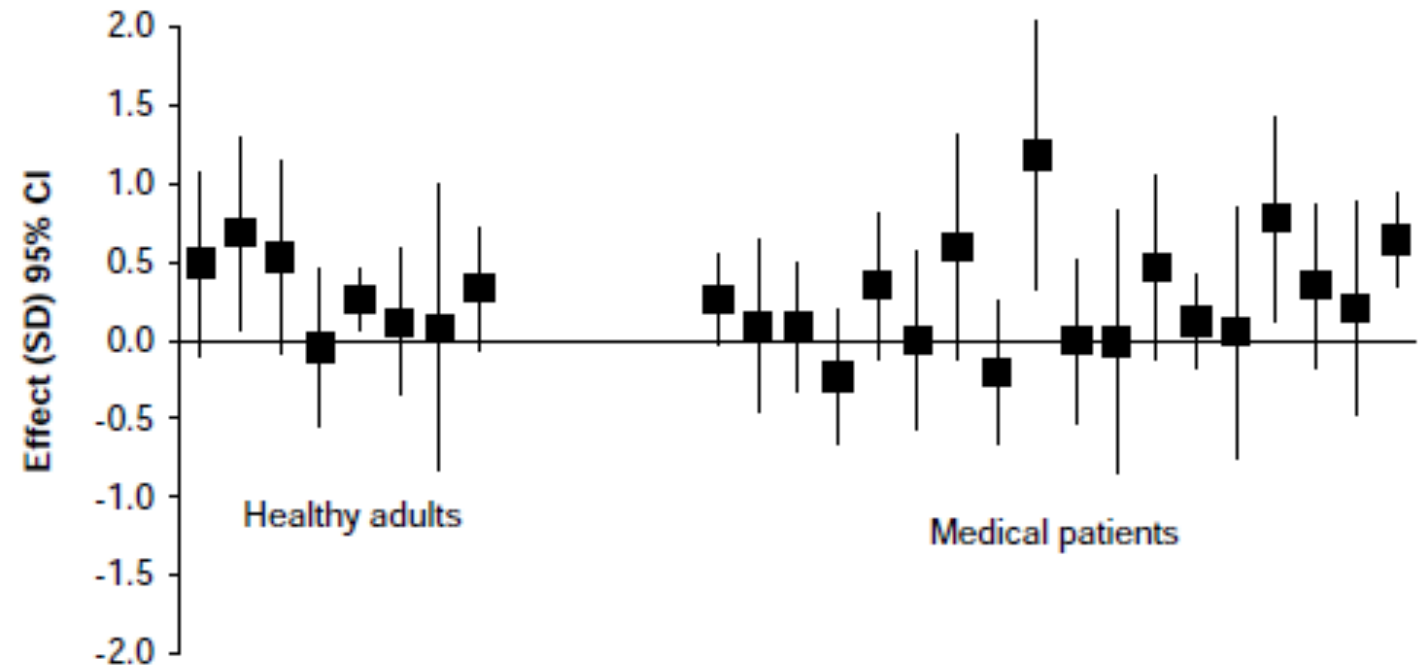
Knowler et al 2012, *NEJM*

# Effect of PA on Mental Health

Depression Symptoms



Feelings of Distress and Well-Being



# Depression Drug Treatments Cost Comparison

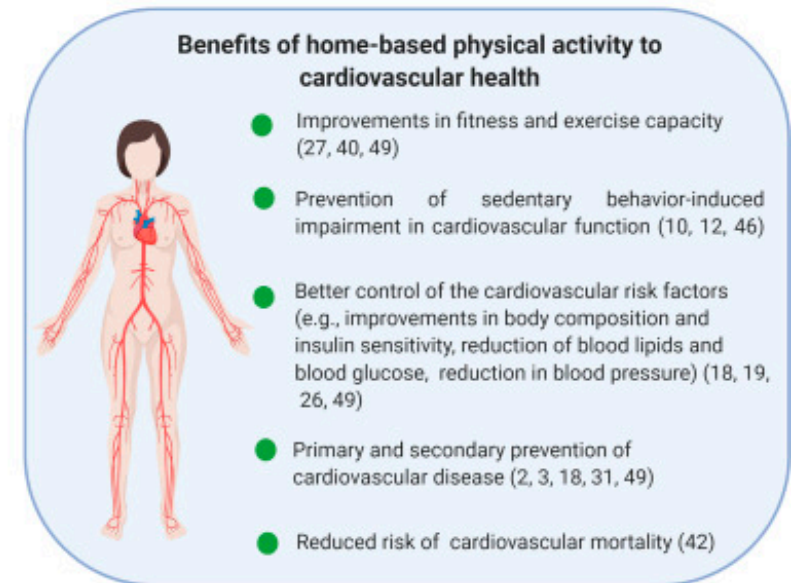
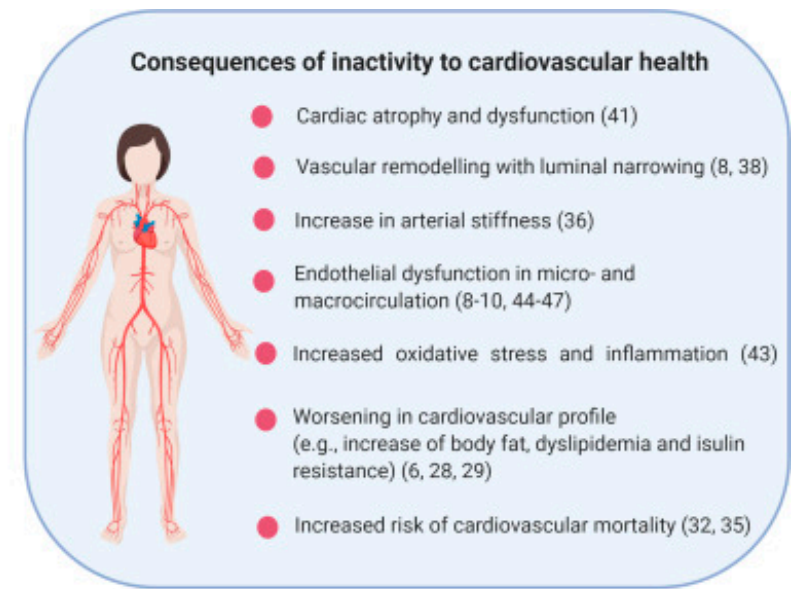
- ~30% achieve remission of depression on meds\*
- Zoloft (Sertraline) 100 mg daily
  - \$139 per month\*\*; \$1668 per year
  - Black Box warning for increased suicide risk!
- Abilify (Aripiprazole) 40 mg daily
  - \$765 per month\*\*; \$9180 per year
- Zyprexa (Olanziprine) 20 mg daily
  - \$1286 per month\*\*; \$15,432 per year

\*STAR\*D Study

\*\*Price for brand name on [www.drugstore.com](http://www.drugstore.com)

# Breaking research on Physical Activity & COVID-19

- **Mental health** - Decreases in PA associated with higher depression, anxiety, and stress symptoms in Australia (Stanton et al 2020)
- **Cardiovascular risk** – Even short-term decreases in PA can increase cardiovascular risk (Pecanha et al, 2020)
- **Diabetes** – Individuals with diabetes at greater risk for poor outcomes from COVID-19, and COVID-19 contributes to worse diabetes outcomes (Hartman-Boyce et al. 2020)



Pecanha et al. 2020. Social Isolation during the COVID-19 pandemic can increase physical inactivity and the global burden of cardiovascular disease. *Am J Physiol Heart Circ Physiol*

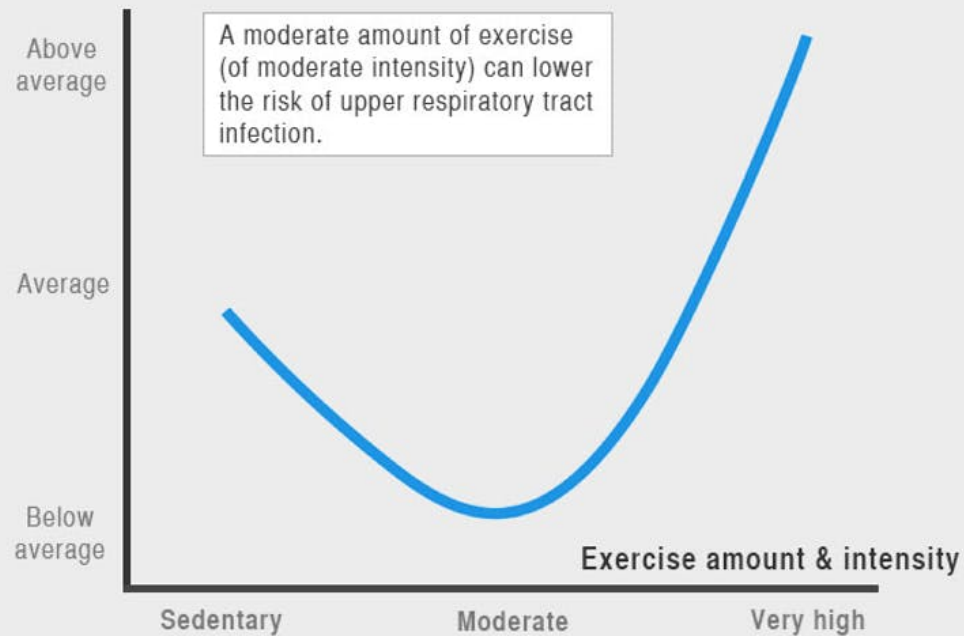


# Physical Activity & Immunity

## Exercising when sick: the risk of infection

Risk of upper respiratory tract infection vs. exercise intensity

Risk of infection



theconversation.com

<https://theconversation.com/health-check-can-i-exercise-while-getting-over-a-bug-38787>

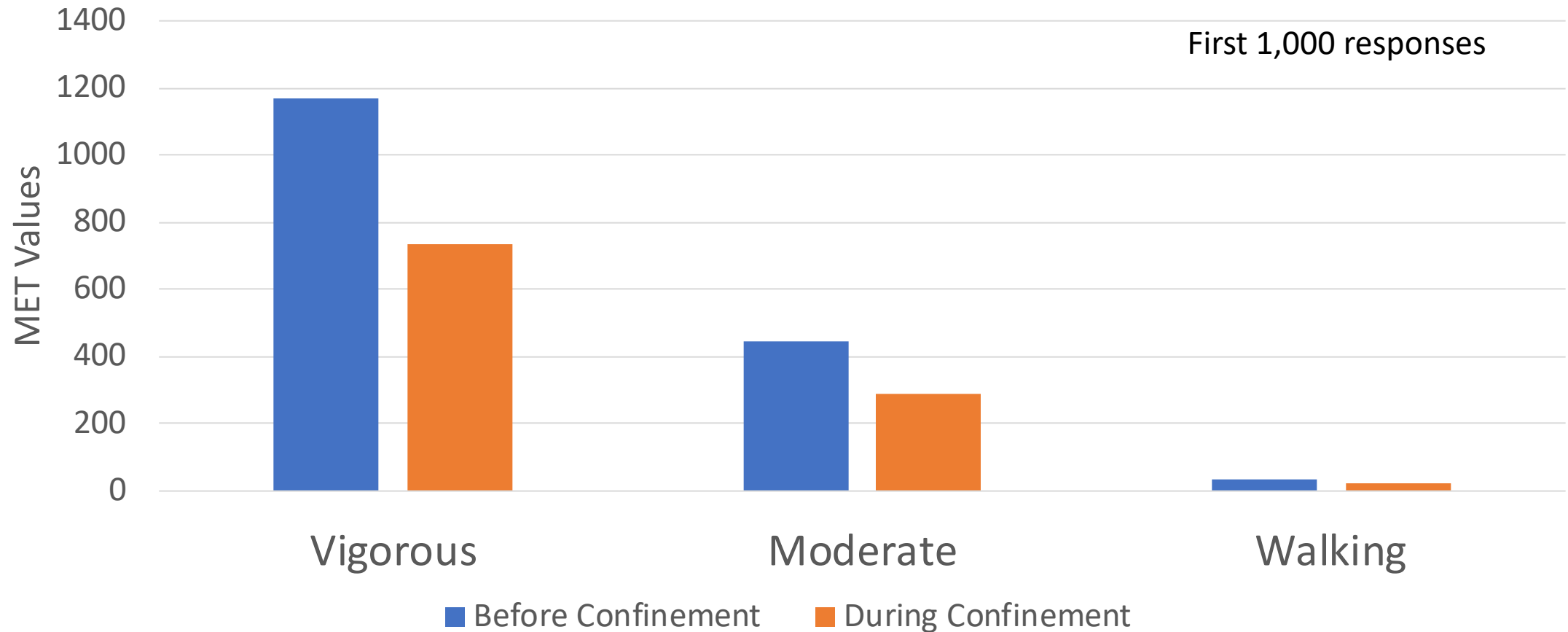


## Physical Activity, Immunity, Inflammation and COVID-19

James F. Sallis, Ph.D.  
University of California, San Diego  
UCSD Medical Student Lecture  
[Http://sallis.ucsd.edu](http://sallis.ucsd.edu)

Physical Activity Can Be Helpful in the Coronavirus Pandemic  
<https://www.isbnpa.org/index.php?r=article/view&id=146>  
(see also <https://youtu.be/F4mcbi9tD-M>)

# Physical Activity during COVID-19



Ammar et al. Effects of COVID-19 Home Confinement on Eating Behavior and Physical Activity: Results of the ECLB-COVID19 International Online Survey. *Nutrients*

# Exercise is Medicine



Goal: To make physical activity assessment and exercise prescription a standard part of the disease prevention and treatment paradigm for all patients



# Current PA Guidelines



**Adults need a mix of physical activity to stay healthy.**

## Moderate-intensity aerobic activity\*

Anything that gets your heart beating faster counts.



AND



\* If you prefer vigorous-intensity aerobic activity (like running), aim for at least 75 minutes a week.

If that's more than you can do right now, **do what you can.** Even 5 minutes of physical activity has real health benefits.

**Walk. Run. Dance. Play. What's your move?**

<https://health.gov/moveyourway>

# US National Physical Activity Guidelines for Adults (aged 18–64)

Easy to remember

- 2 hours and 30 minutes a week of moderate-intensity
  - or 1 hour and 15 minutes a week of vigorous
  - or an equivalent combination
- ~~Episodes of at least 10 minutes, preferably spread throughout the week~~
- Additional health benefits are provided by increasing to 5 hours (300 minutes) a week of moderate
  - or 2 hours and 30 minutes a week of vigorous
  - or an equivalent combination of both
- Muscle-strengthening activities on 2 or more days per week

**150** moderate

Or half

**75** vigorous

Double for additional benefits

**300** moderate

Or half

**150** vigorous

**+ muscle strengthening x2**



# US National Physical Activity Guidelines for Children (aged 6–17)

- **60 minutes (1 hour)** or more of moderate-to-vigorous physical activity daily
  - Most should be moderate- or vigorous intensity
  - Vigorous-intensity physical activity on at least 3 days a week
- **Muscle-strengthening** activities on at least 3 days a week
- **Bone-strengthening** activities on at least 3 days a week

- **Preschool children (aged 3-5)**
- Should be physically active throughout the day
- Encourage active play that includes a variety of activity types





# Older adults and chronic conditions?

In summary, do as much as you can!



# What is moderate and vigorous physical activity?

- Talk test
  - Light – can talk & sing
  - Moderate – can talk but can't sing
  - Vigorous – can't talk or sing
- Moderate activities (3-<6 METs)
  - Brisk walking, golf, canoeing, water aerobics, ballroom dancing, vacuuming
- Vigorous Activities ( $\geq 6$  METs)
  - Running, sports like basketball, chopping wood, carrying groceries up stairs
- More on this next week!

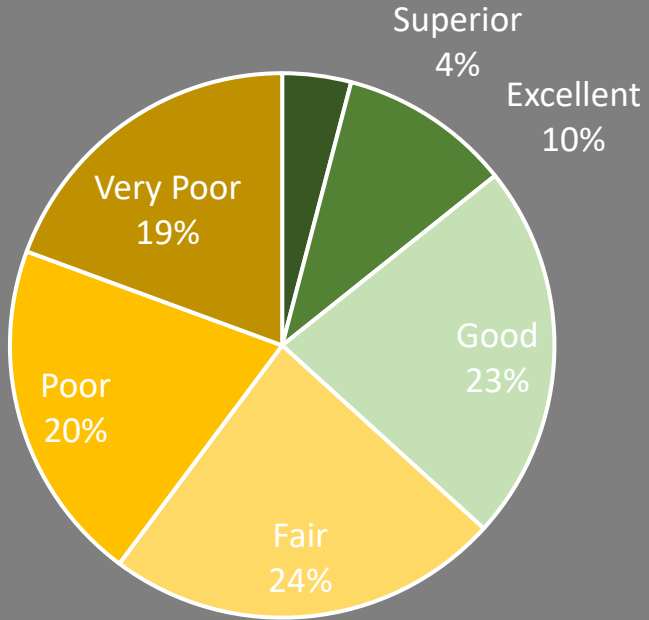


*A MET is a metabolic equivalent of how much energy you're using*

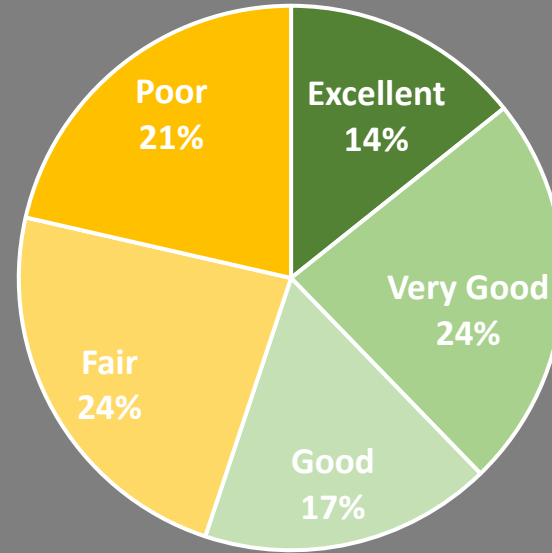
<https://sites.google.com/site/compendiumofphysicalactivities/Activity-Categories>

# Fitness of University of Arkansas Students, Faculty and Staff

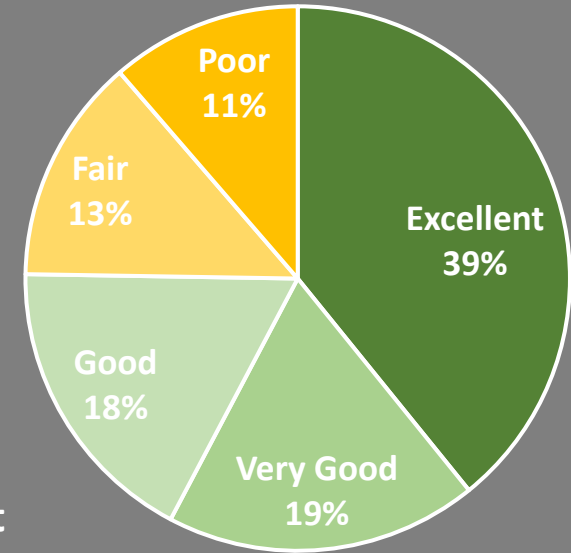
## Aerobic Fitness



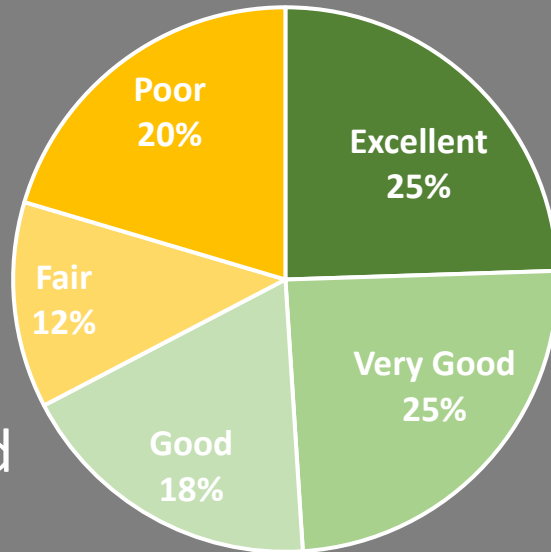
## Muscular Strength



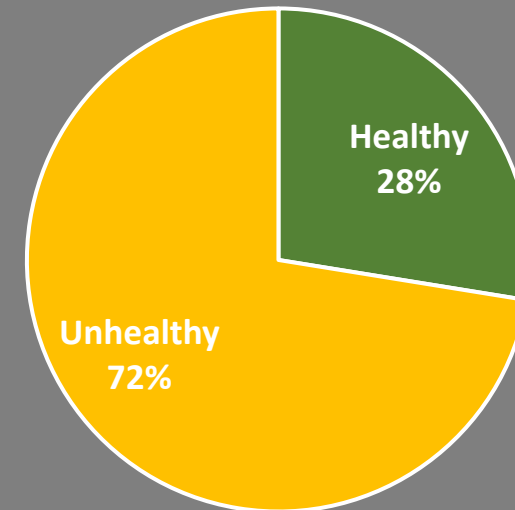
## Muscular Endurance




## Flexibility



## Body Fat



In general...

 = Good

 = Not so good

# What can you do to help?

1. Participate in the survey!
2. Encourage students/colleagues to participate
3. Get involved in the conversation





# Next week...

How do we meet the physical activity guidelines in our daily, socially distanced, lives?



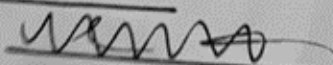


# ExeRxcise is Medicine<sup>®</sup> On Campus

University of Arkansas

Name: EVERYONE  
Address: WorldWide Date: always

**Rx** Exercise  
Dosage: 30 min. a day  
Side effects: increased energy,  
improved brain health, weight loss,  
strengthens lungs, and heart,  
reduces blood sugar levels, regulates  
blood pressure, improves mood, reduce  
risks of cancers and heart disease

MD, Dr. Feel Good  
SIGNATURE 

# Questions?

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