

# Starting and maintaining physical activity this winter and beyond

Dr. Laura Bilek, College of Allied Health

Dr. Diane Ehlers, Department of Neurological Sciences

January 21, 2021



**University of Nebraska  
Medical Center™**

# What is Physical Activity?

---

**Physical Activity**

Bodily movement produced by skeletal muscles that results in energy expenditure beyond resting level.

**Exercise**

Subset of physical activity that is planned, structured, repetitive, and purposeful.

---



# Health Benefits of Physical Activity for Adults

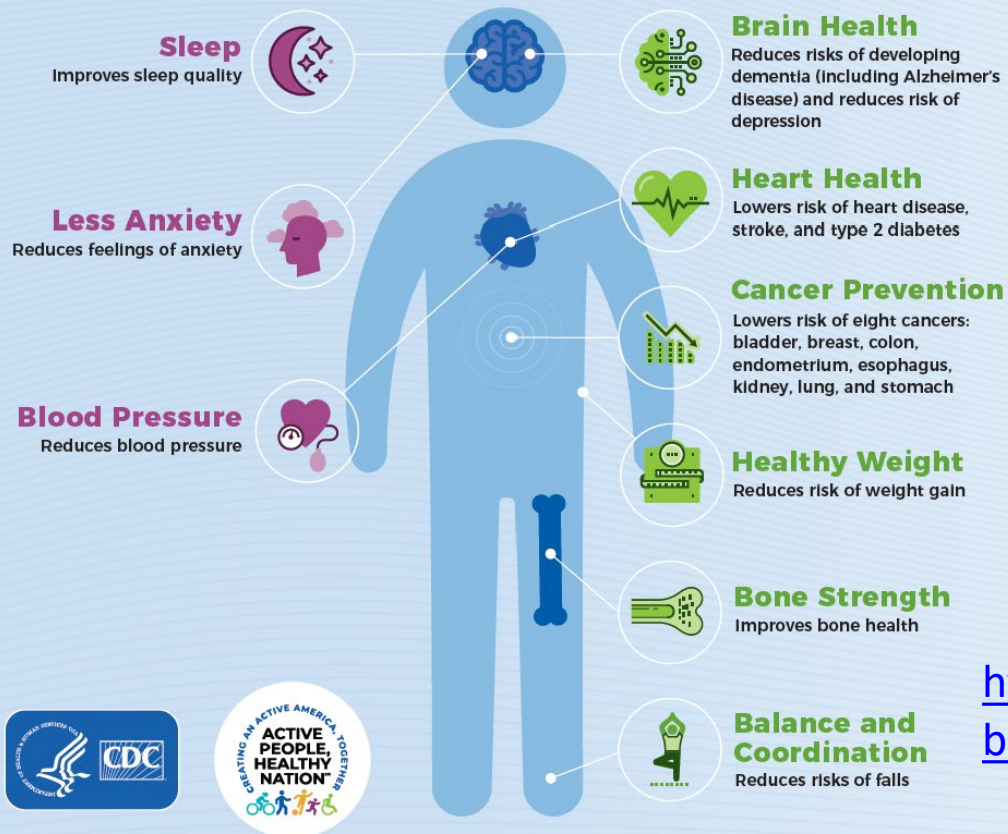


## IMMEDIATE

A single bout of moderate-to-vigorous physical activity provides immediate benefits for your health.

## LONG-TERM

Regular physical activity provides important health benefits for chronic disease prevention.



<https://www.cdc.gov/physicalactivity/basics/pa-health/#reducing-disease>

Source: Physical Activity Guidelines for Americans, 2nd edition

To learn more, visit: <https://www.cdc.gov/physicalactivity/basics/adults/health-benefits-of-physical-activity-for-adults.html>

August 2020



# Why Physical Activity

<https://www.cdc.gov/physicalactivity/about-physical-activity/why-it-matters.html>  
<https://www.cdc.gov/physicalactivity/about-physical-activity/why-it-matters.html>

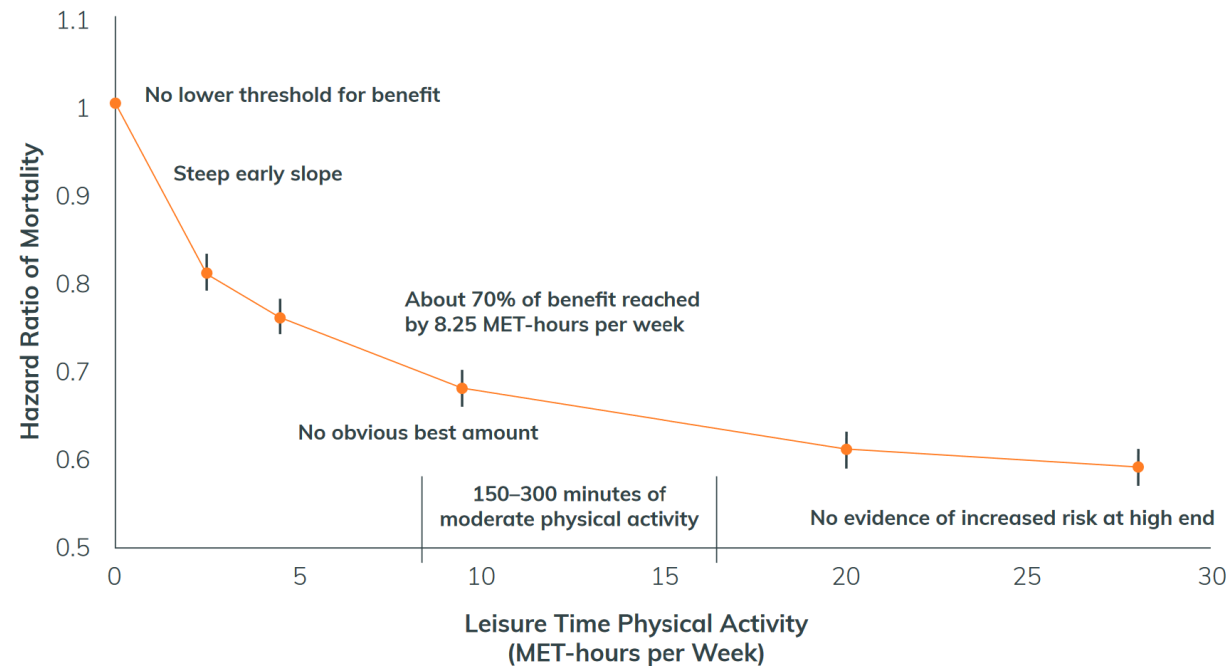
[https://www.cdc.gov/physicalactivity/about-physical-activity/pdfs/healthy-strong-america-201902\\_508.pdf](https://www.cdc.gov/physicalactivity/about-physical-activity/pdfs/healthy-strong-america-201902_508.pdf)





# Health Benefits of Physical Activity: Mortality

Figure 2-1. Relationship of Moderate-to-Vigorous Physical Activity to All-Cause Mortality



Source: Adapted from data found in Moore SC, Patel AV, Matthews CE. Leisure time physical activity of moderate to vigorous intensity and mortality: a large pooled cohort analysis. PLoS Med. 2012;9(11):e1001335. doi:10.1371/journal.pmed.1001335.



# Health Benefits of Physical Activity: Mental Health

## Depression

### Key messages

#### What is already known

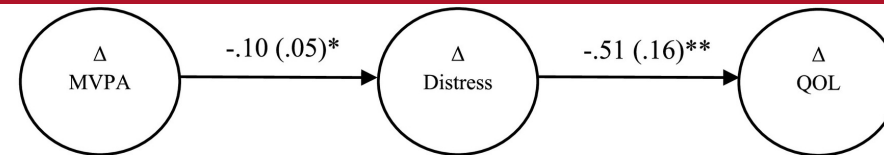
- ▶ Exercise therapy in the management of depression can improve symptoms.
- ▶ Whether exercise confers protection against the onset of depression is uncertain.
- ▶ Whether odds of depression vary according to physical activity dose or change in physical activity is not fully understood.

#### What are the new findings

- ▶ Physical activity is inversely associated with odds of incident depression.
- ▶ Physical activity is associated with lower odds of having more subclinical depressive symptoms.
- ▶ Odds reduction depended on amount of physical activity. Moderate-to-vigorous physical activity was associated with lower odds more than light physical activity.
- ▶ Odds of depression were lower in those studies where researchers reported an increase in physical activity than in those studies where physical activity was measured only at baseline.

Dishman et al., *Br J Sports Med* 2021;  
Epub ahead of print. doi:10.1136/  
bjsports-2020-103140

## Distress: Anxiety, Depression, Stress, Sleep dysfunction



<sup>a</sup>Significant indirect effect of MVPA on QoL [indirect effect = 0.05; bias-corrected bootstrapped 90% CI=.005, .125]. Coefficients reported herein are unstandardized estimates.

\* significant at  $p=.05$

\*\* significant at  $p=.001$

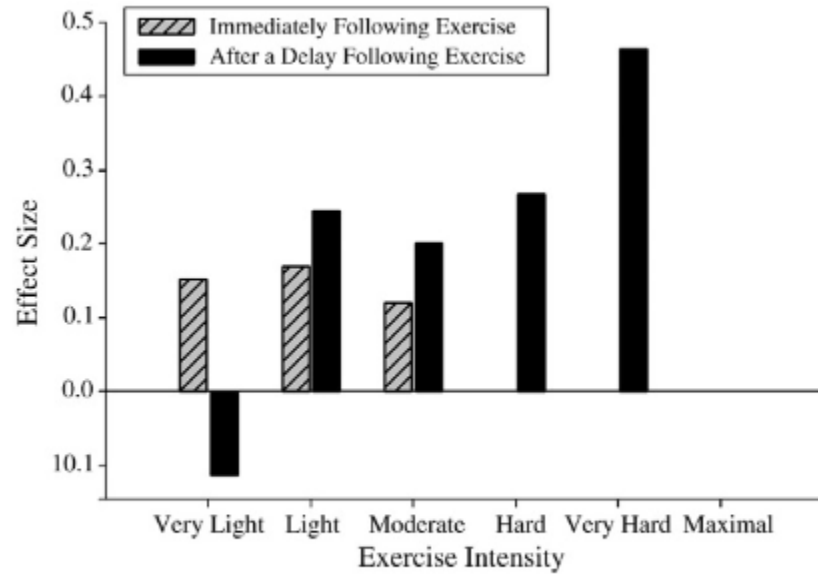
Awick, Ehlers et al., *Gen Hosp Psych* 2017;  
49:44-50.

doi:10.1016/j.genhosppsy.2017.06.005



# Health Benefits of Physical Activity: Other Things that Matter

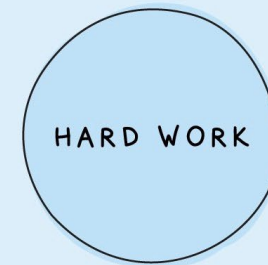
## Cognitive Function



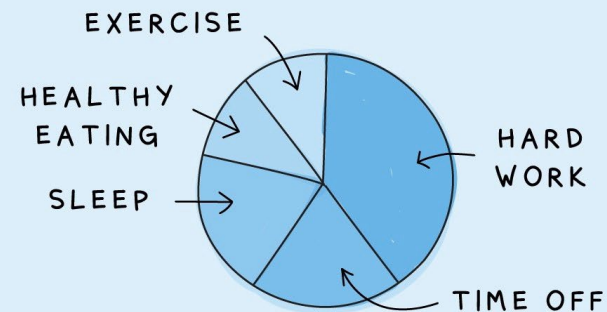
**Fig. 1 – Effect size as a function of paradigm and exercise intensity.**

Chang et al., *Brain Res* 2012; 1453:87-101.  
doi: 10.1016/j.brainres.2012.02.068

WHAT I THOUGHT WOULD  
MAKE ME PRODUCTIVE

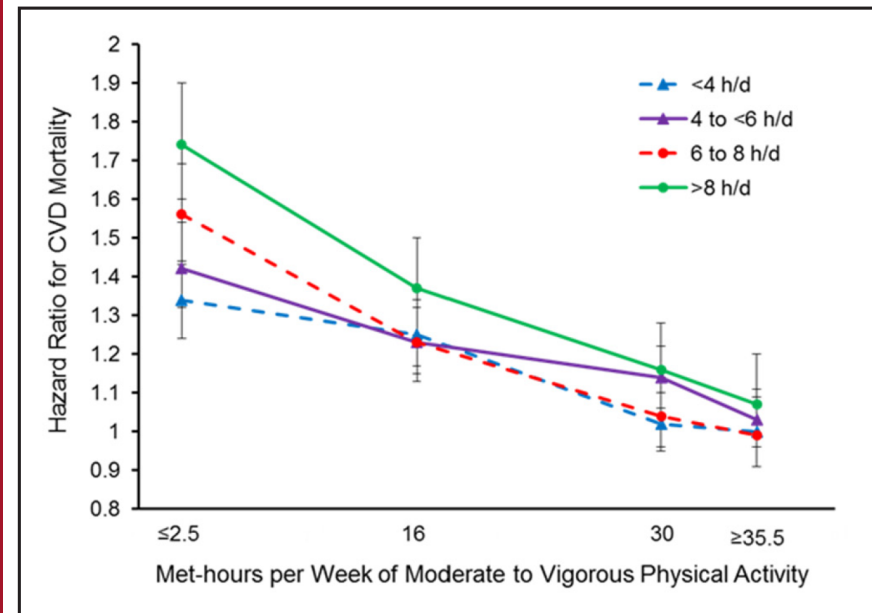
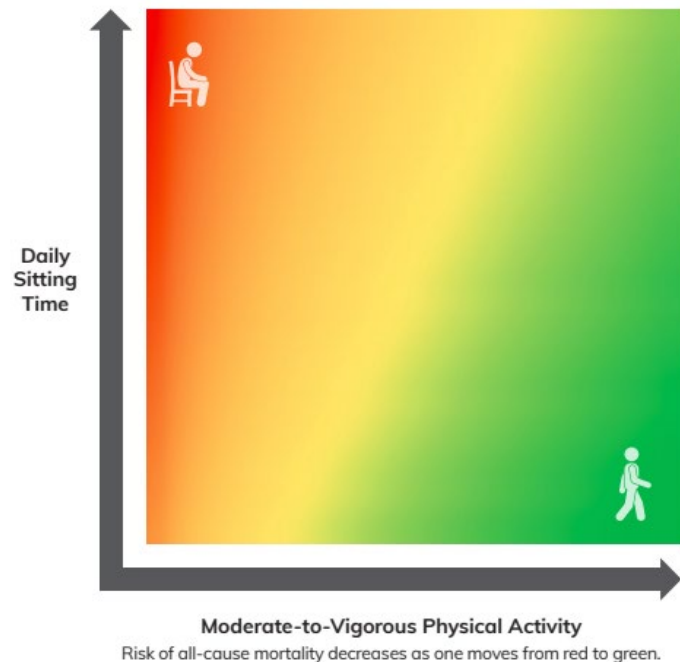


WHAT ACTUALLY DOES



# But what about sitting?

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



**Figure 1.** Hazard ratios for the joint association of sitting time and physical activity with cardiovascular disease (CVD) mortality. Data derived from appendix of Ekelund et al.<sup>26</sup>

# Physical Activity Guidelines: Types of Activity

- ✓ **Aerobic Activity**
- ✓ **Muscle Strengthening Activity**
- ✓ **Bone Strengthening Activity**



# Physical Activity Guidelines

## How much activity do I need?

### Moderate-intensity aerobic activity

Anything that gets your heart beating faster counts.



### Muscle-strengthening activity

Do activities that make your muscles work harder than usual.



Tight on time this week? **Start with just 5 minutes.** It all adds up!

Or get the same benefits in half the time. If you step it up to **vigorous-intensity** aerobic activity, aim for at least **75 minutes** a week.

## Types of Activity: Aerobic

- Definition:
  - Activity in which the body's large muscles move in a rhythmic manner for a sustained period of time.

## Types of Activity: Muscle-Strengthening

- Definition:
  - Physical activity, including exercise, that increases skeletal muscle strength, power, endurance, and mass.

## Is it moderate or vigorous? Use the "talk test" to find out.

When you're being active, just try talking:

- If you're breathing hard but can still have a conversation easily, it's **moderate-intensity activity**
- If you can only say a few words before you have to take a breath, it's **vigorous-intensity activity**





# Physical Activity Guidelines

## Key Guidelines for Adults



- ✓ Adults should move more and sit less throughout the day. Some physical activity is better than none. Adults who sit less and do any amount of moderate-to-vigorous physical activity gain some health benefits.
- ✓ For substantial health benefits, ~~adults should do at least 150 minutes (2 hours and 30 minutes) to 300 minutes (5 hours) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) to 150 minutes (2 hours and 30 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity.~~ Preferably, aerobic activity should be spread throughout the week.
- ✓ Additional health benefits are gained by engaging in physical activity beyond the equivalent of 300 minutes (5 hours) of moderate-intensity physical activity a week.
- ✓ Adults should also do muscle-strengthening activities of moderate or greater intensity and that involve all major muscle groups on 2 or more days a week, as these activities provide additional health benefits.

- **Flexibility and Balance training**
- **Injury prevention**



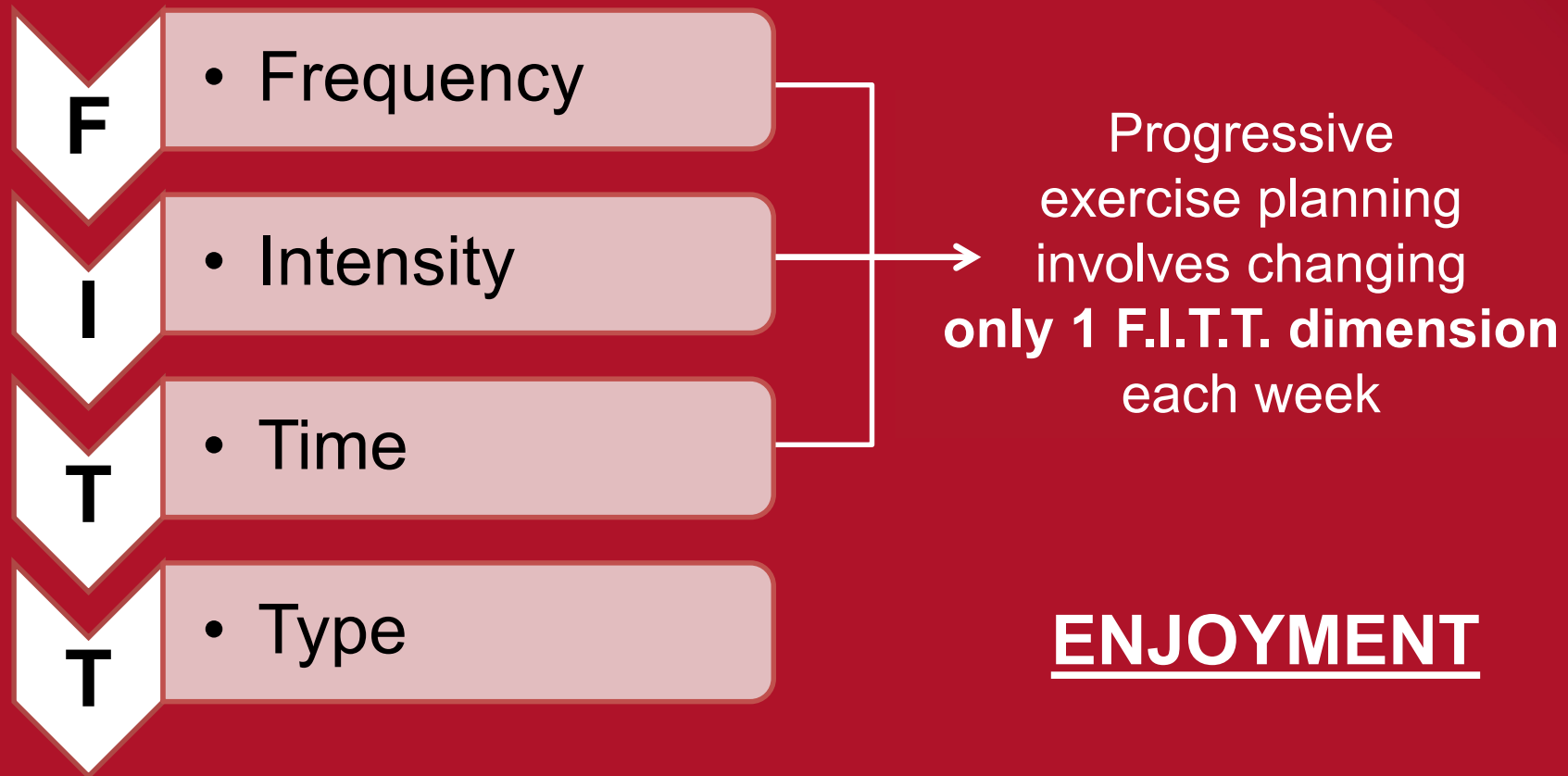
# Bone Exercise Prescription

## Types of Activity: Bone-Strengthening

- Definition:
  - Physical activity that produces an impact or tension force on the bones that promotes bone growth and strength.
  - Also called weight-bearing or weight-loading activity
- Note: bone-strengthening activities can also be aerobic and muscle strengthening.
- Frequency
  - Goal is 3 days/week
- Dose/Intensity
  - Resistance training for muscle **STRENGTH** (~70% 1 RM)
  - Volitional fatigue 8-12 reps
  - 1, 2 or 3 sets ?



# Implementing Physical Activity Guidelines: Progressive Prescriptions

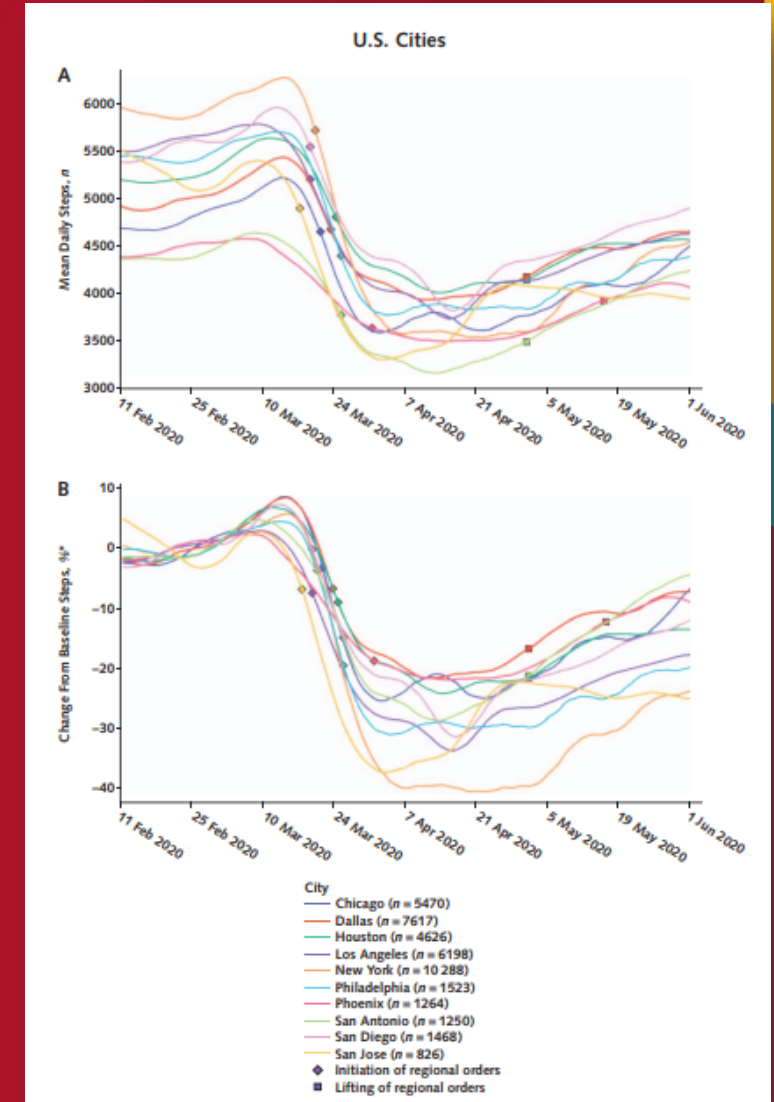


**ENJOYMENT**



# PHYSICAL ACTIVITY DURING COVID: Physical Distancing ≠ Physical Inactivity

- <https://www.cdc.gov/physicalactivity/how-to-be-physically-active-while-social-distancing.html>
- **Masking up while working out:**  
<https://www.nytimes.com/2020/11/18/well/move/mask-exercise-workouts.html>
- **Dr. Jeff Woods – University of Illinois at Urbana-Champaign:**  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7031769/>



Meyer et al., *Translat Behav Med* 2021; epub ahead of print. doi: 10.1093/tbm/ibaa134;  
Tison et al., *Annals Intern Med* 2020; 173(9): 767-770. doi: 10.7326/M20-2665



# Aerobic Activity:

**CALISTHENICS**



**SLEDDING/  
PLAYING**



**JOGGING**



**ICE SKATING**



**JUMPING  
ROPE**



**HIKING**





# BONE IMPACT and RESISTANCE TRAINING Exercises

Jumping Rope



Lunges



Calisthenics



Free Weights



Hiking



Stair Climbing



Step Exercise



Sportcord





# SLC Fitness Resources

<https://www.unmc.edu/cfhl/membership/covid-policies.html>



# Online Activity Resources:

**Kaiser guided strengthening Video**

<https://www.youtube.com/watch?v=cFjNxU6yEVs>

**Seven-Minute Exercise Video**

<https://www.youtube.com/watch?v=Jru5B044HOs>

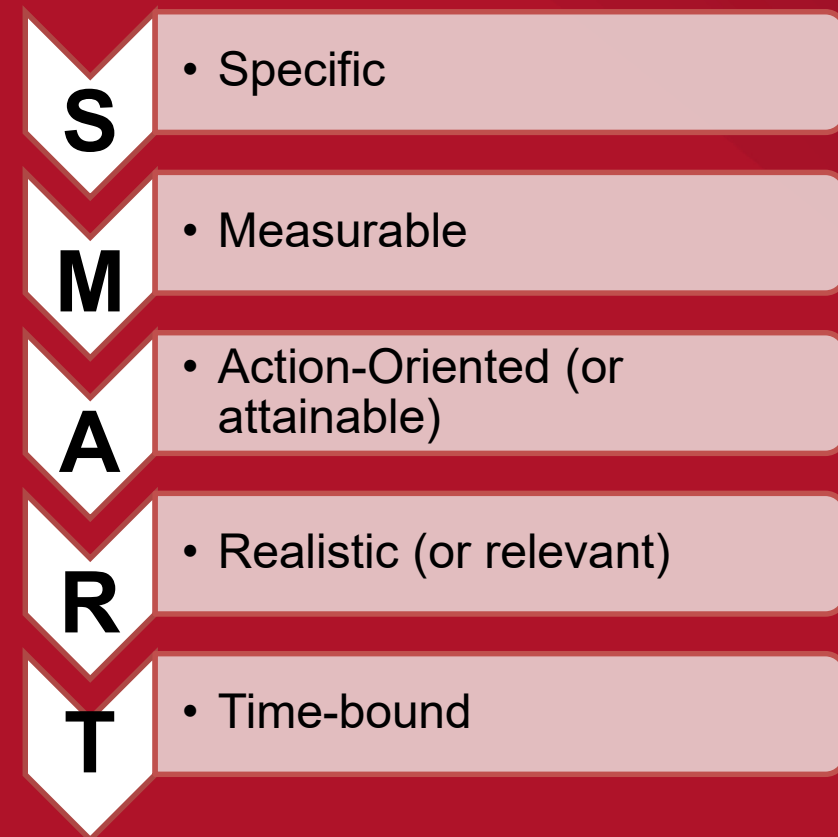
**Physical Activity Guidelines and Move Your Way Campaign**

<https://health.gov/moveyourway#adults>



# How do I make activity a habit: Applying behavioral theory

- **Plan your behavior**
  - Create *SMART* goals for an immediate action plan
  - *Monitor* behavior and progress weekly
  - *Revisit* and *Revise*
    - If not confident (7/10) that you can achieve your goals
    - Advance your goals
- **Build confidence**
  - Set *progressive* goals
  - Set yourself up for *success*
  - *Learn from others* like you
  - Enlist a *cheerleader*
- **Identify your facilitators and barriers**
  - Example *facilitators*: sidewalks, gym membership, friends to be active with, appropriate clothing
  - Example *barriers*: time, motivation, fatigue, bad weather, don't know how
- **Reflective vs. Reactive processes**
  - Reflective: goals, behavioral planning, executive function
  - Reactive: habit strength, affective, unconscious, impulsive
- **Lapse vs. Relapse**



# Laura's SMART Goals Example:

Specific



- April 2020: Walk (including hills) 15 minutes, 3 times per week.
- July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
- November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
- Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.



# Laura's SMART Goals Example:

Measureable



- April 2020: Walk (including hills) 15 minutes, 3 times per week.
- July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
- November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
- Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.



# Laura's SMART Goals Example:

Action-Oriented



- April 2020: Walk (including hills) 15 minutes, 3 times per week.
- July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
- November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
- Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.





# Laura's SMART Goals Example:

Realistic



- April 2020: Walk (including hills) 15 minutes, 3 times per week.
- July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
- November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
- Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.



# Laura's SMART Goals

## Example:

Time-bound



- April 2020: Walk (including hills) 15 minutes, 3 times per week.
- July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
- November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
- Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.



# Laura's SMART Goals Example:

- April 2020: Walk (including hills) 15 minutes, 3 times per week.
  - July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
  - November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
  - Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.
- Revised goals timeline:
- April 2020: Walk (including hills) 15 minutes, 3 times per week.
  - July 2020: Walk (including hills) at 8:00 am 5 days per week for 20-25 minutes at a moderate intensity.
  - November 2020: Add 3, 5 min strengthening sessions/day (did not meet this goal – too ambitious.) Need to scale back to develop a new habit.
  - Jan 2021: Exercise for 5 minutes, 3 times week to complete planks and squats only.
- Revisions:
- Revised: Advance
  - Revisit
  - Revised: Scale back



# WHAT IS YOUR GOAL?

Is it SMART?

What are your barriers to achieving this goal?

What will help you achieve this goal (i.e., facilitators)?

What resources will you employ?

