1st Monthly Health Awareness Seminar Series
June 4, 2026

Topic - Sedentary Work Environment: Independent Risk Factor for All-Cause Mortality

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MBBS

Education

- MBBS – Bankura Sammilani Medical College, WBUHS (2014-2019)

Honours

- Forensic Medicine and Toxicology

Work

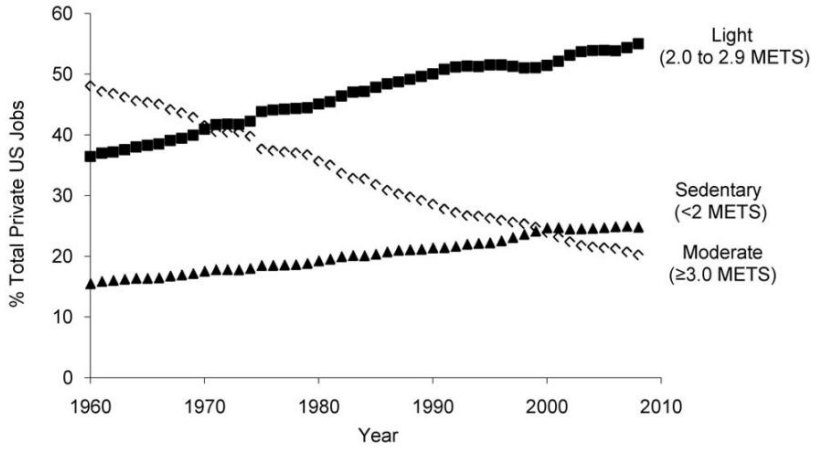
- Part-Time Doctor: CSIR-CGCRI (2026-Present)
- Medical Officer: CNCI, New Town, Kolkata (Role: General Duty Medical Officer in Heamato-Oncology Department) (2023-2024)
- Medical Officer: Kolkata Municipal Corporation, Kolkata (Role: Medical Officer in OPD under National Urban Health Mission) (2021)
- House Staff: Bankura Sammilani Medical College, Bankura (Role: General Duty in Chemo and Radiotherapy department) (2019-2020)
- Internship: Bankura Sammilani Medical College, Bankura (Role: General Duty) (2018-2019)

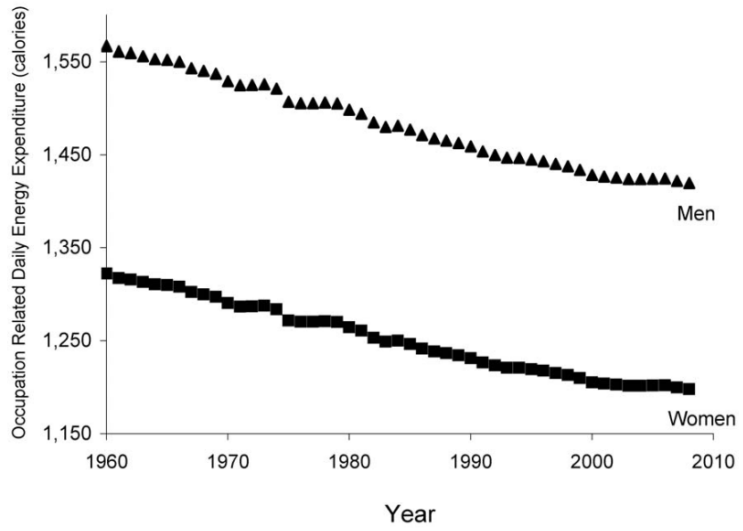
SEDENTARY LIFESTYLE LEADING TO ALL CAUSE MORTALITY

Dr. Anamika Mandal, MBBS

SEDENTARY LIFE

Increasing sedentary lifestyle





https://journals.physiology.org/doi/full/10.1152/physrev.00022.2022

SUSTAINED EFFECTS OF INCREASING SEDENTARY BEHAVIOR

Central nervous system:
- no data

Cardiorespiratory system:
↓ cardiorespiratory fitness

Intermediary metabolism:
↑ postprandial (pp) glucose and insulin responses
↓ insulin sensitivity
↑ TG, poor lipid profile ?
↑ fasting/pp CHO oxidation #
↓ fasting/pp lipid oxidation #
↑ pro-inflammatory markers ?
Impaired adaptations to exercise session#

Adipose tissue:
↑ total body fat, adiposity
↑ visceral fat depot #

Musculoskeletal system:
↓muscle activity
↓total fat-free mass
↓muscle strength
↓insulin sensitivity
↓oxidative capacity
↓bone mineral density

Cardiovascular system:
↑ vascular dysfunction ?

SUSTAINED EFFECTS OF REDUCING/INTERRUPTING SEDENTARY BEHAVIOR

Central nervous system:
↑ cerebrovascular blood flow #

Cardiovascular and respiratory systems:
↑ cardiorespiratory fitness #
↓ systolic blood pressure * ?

Intermediary metabolism:
↓ fasting glucose * ?
and insulin * concentrations
↓ glucose variability #
↓ HbA1c levels * ?
↓ fasting HDL concentration * ?

Body weight and adiposity:
↓ body weight * ?
↓ total body fat percentage *
↓ waist circumference * ?

Musculoskeletal system:
↑ muscle activity
↑ total fat-free mass #
↑ muscle strength #

Cardiovascular system:
↑ vascular function *

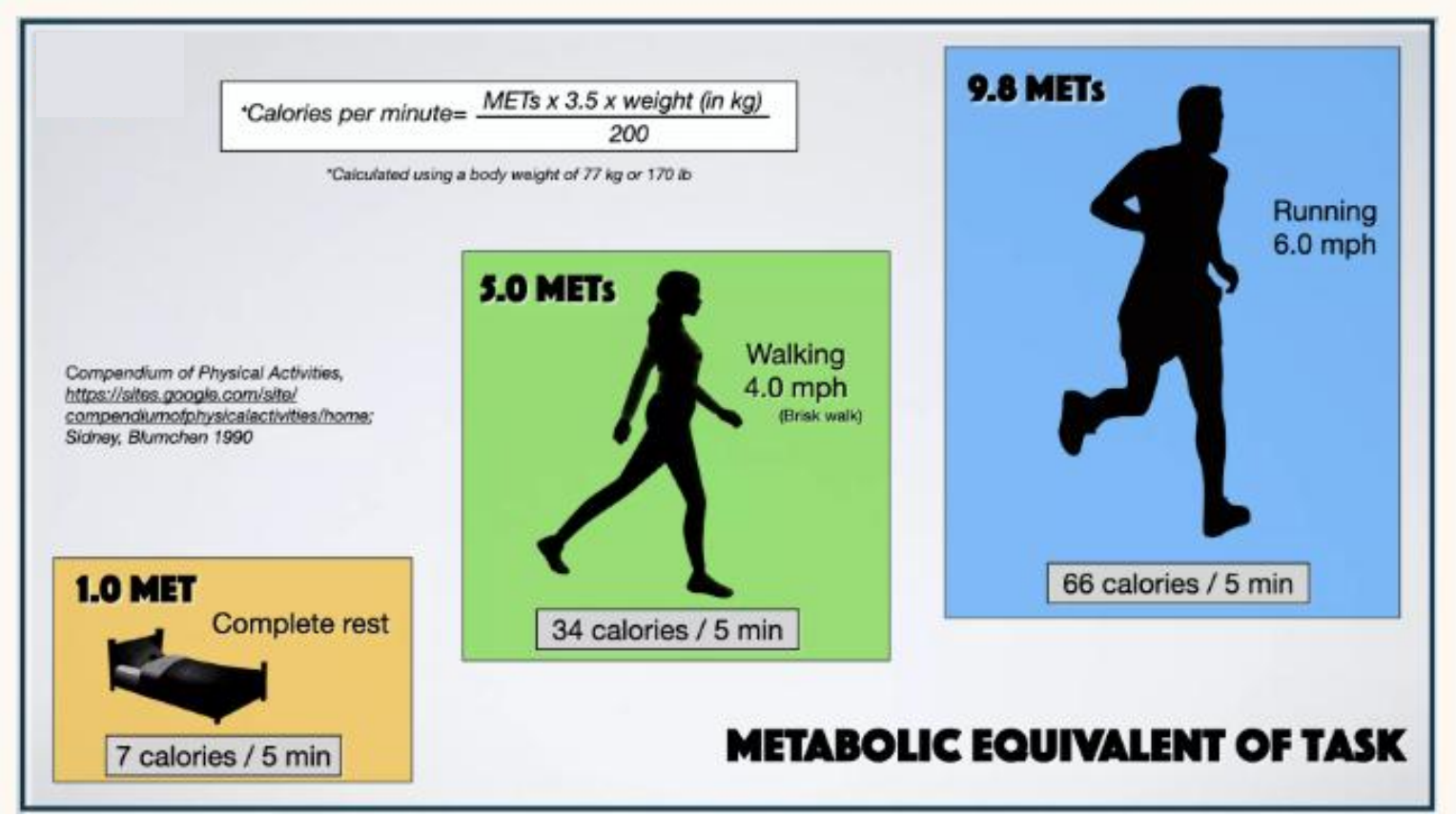
* Evidence from meta-analyses;
? Mixed evidence; # Limited evidence

Church, Timothy S., Diana M. Thomas, Catrine Tudor-Locke, Peter T. Katzmarzyk, Conrad P. Earnest, Ruben Q. Rodarte, Corby K. Martin, Steven N. Blair, and Claude Bouchard. "Trends over 5 decades in US occupation-related physical activity and their associations with obesity." *PloS one* 6, no. 5 (2011): e19657.

OVERVIEW

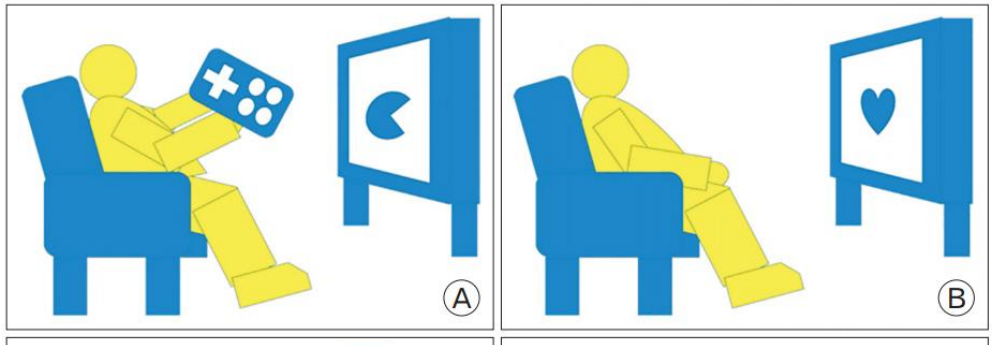
1. Definition of sedentary lifestyle
2. Why sedentary life is bad: Evolutionary Origin
3. What happens to our body?
4. What happens to our mind?
5. Association of sedentary lifestyles with diseases
6. How to not die early

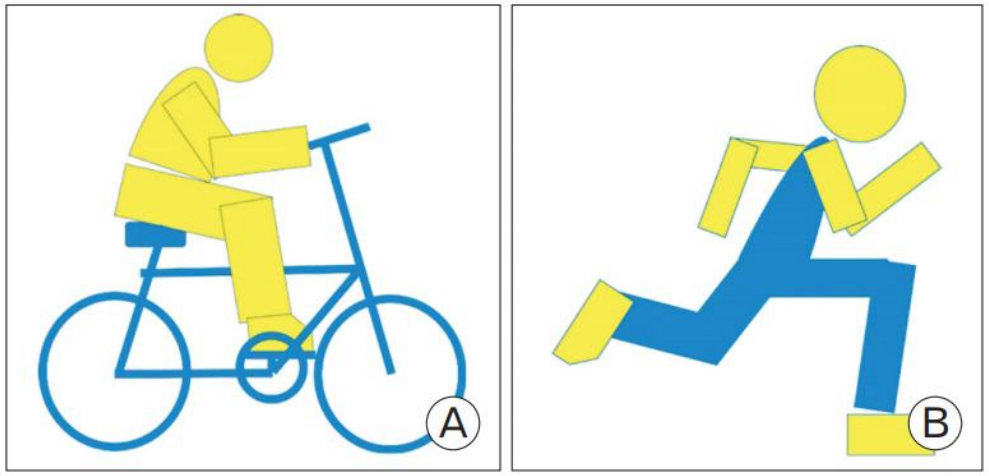
DEFINITION OF SEDENTARY LIFESTYLE



- Any waking activity at ≤ 1.5 METs
- MET is Metabolic Equivalent of Task
- Body Weight Assumed = 77 Kg for calorie burning calculation
- Physical inactivity and sedentary behavior are not same

SOME ACTIVITIES AND THEIR METS

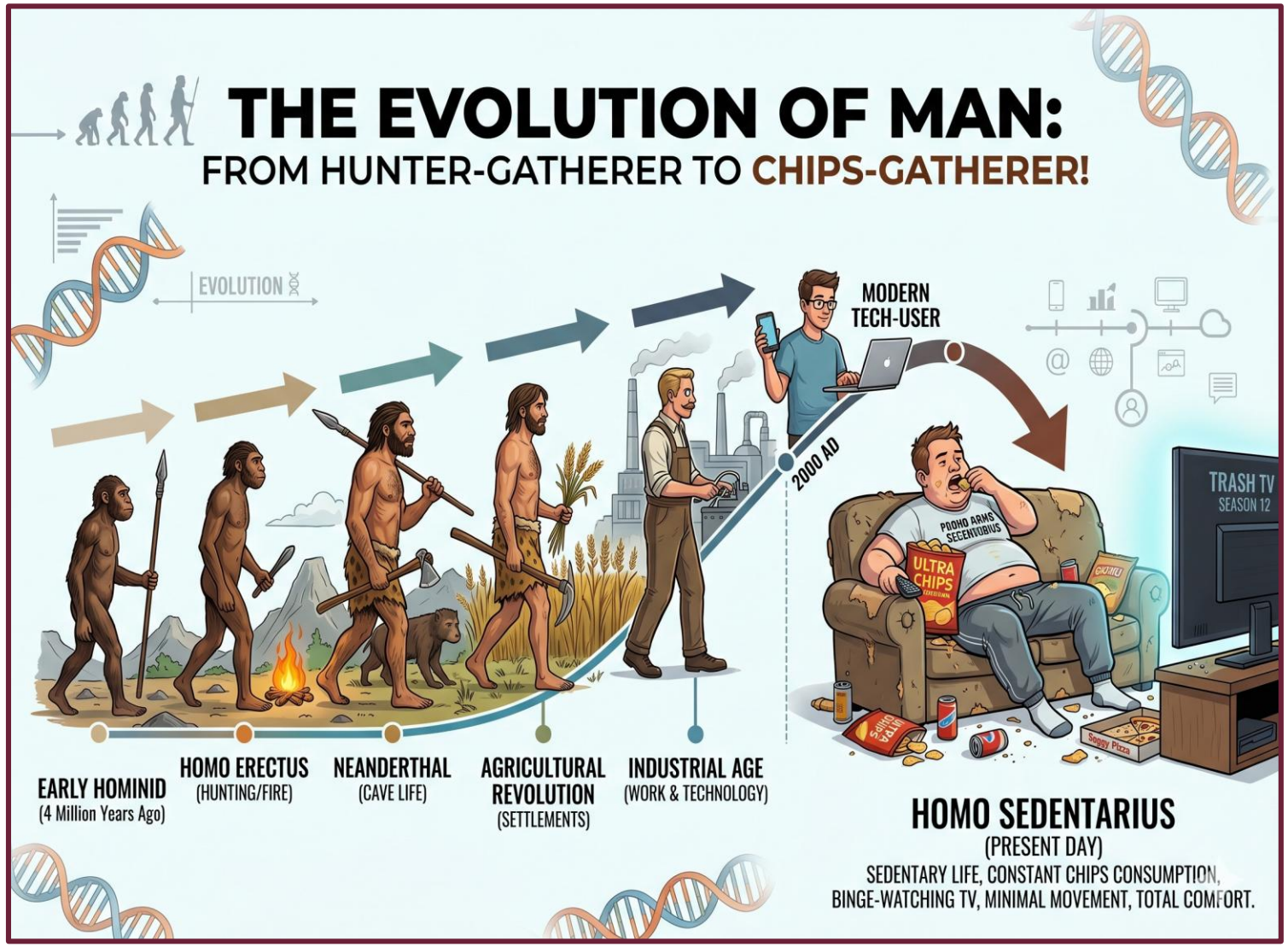




ACTIVITIES AND THEIR MET LEVELS

Sitting watching television	1 MET
Light gardening e.g weeding	2 METs
Getting dressed	2-3 METs
General housework	3-4 METS
Taking a shower	3-4 METS
Brisk walking (3 mph)	3.3 METs
Golfing (carrying clubs)	4-5 METs
Strenuous hiking	6-7 METs
Swimming (front crawl)	9-10 METs

OUR BODY WAS NOT MADE FOR SEDENTARY LIFESTYLE

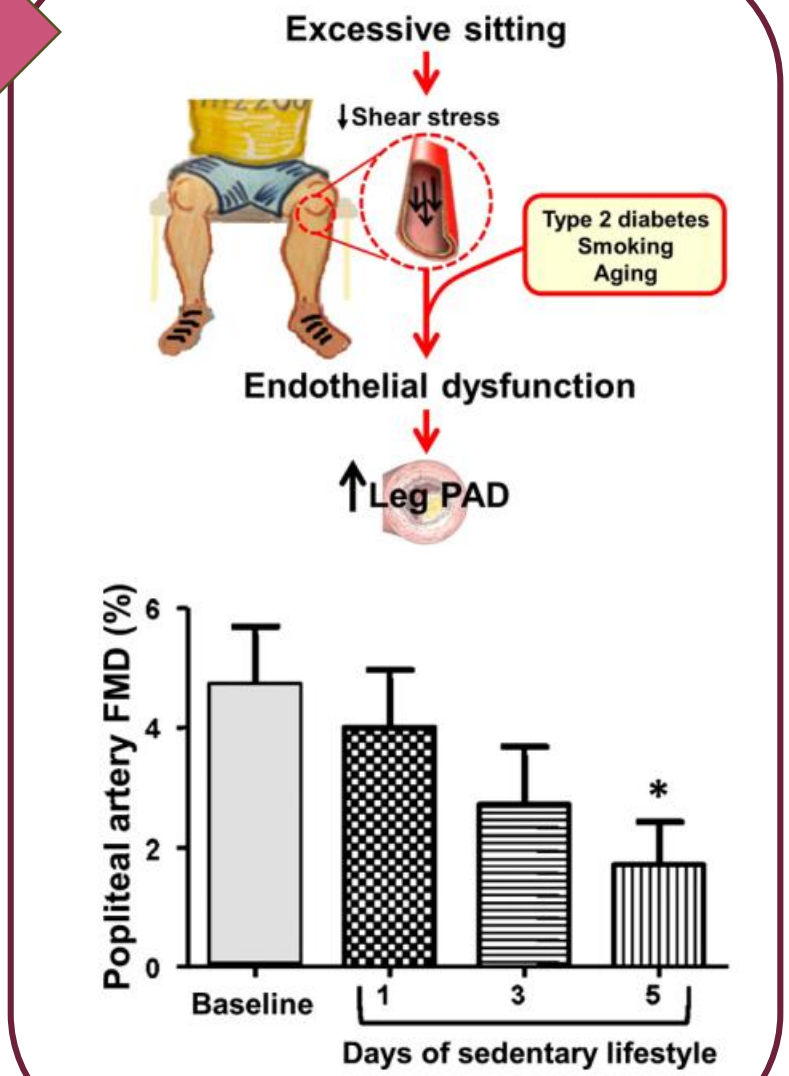


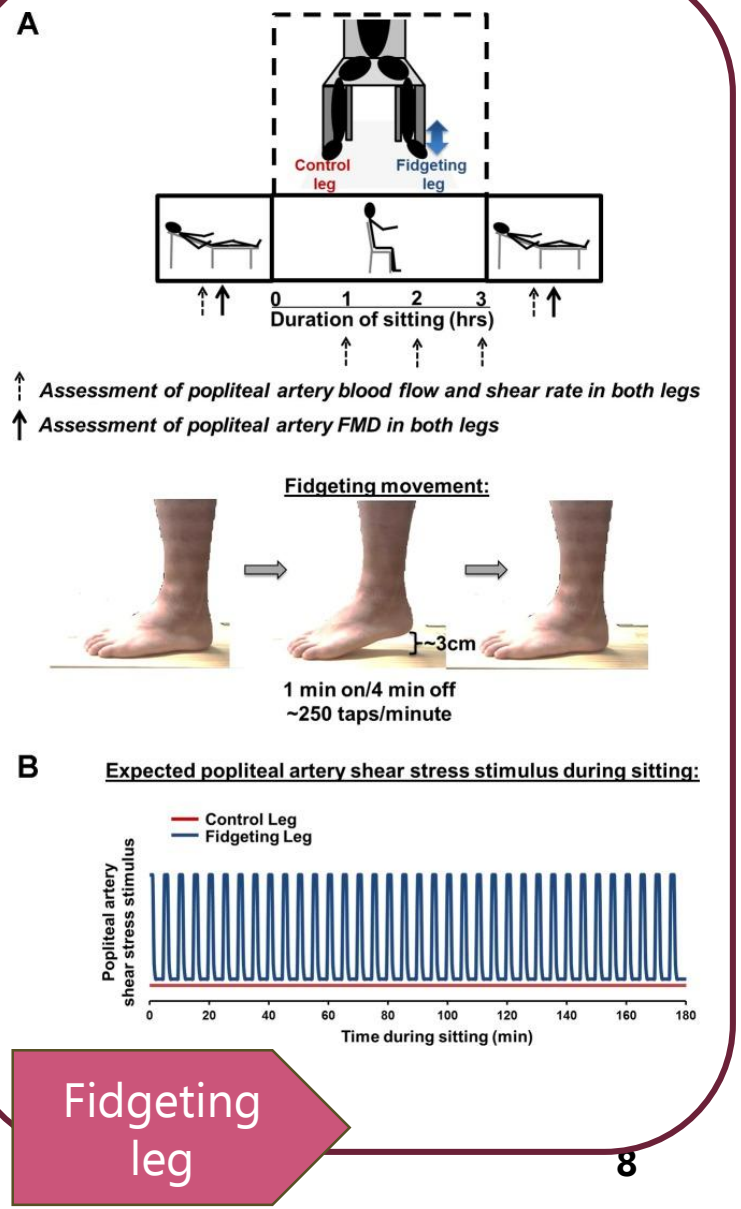
- For our ancestors, survival depended on movements
- Body parts and brain evolved expecting movements
- It's not really about burning calories.
- Evolution is slow, but our world changed overnight.

WHAT HAPPENS TO THE BODY DURING PROLONGED SITTING

- Sitting changes body physiology
- Reduces muscle activity, blood circulation and calorie burning
- Inactive muscles become metabolically silent.

Less blood flow





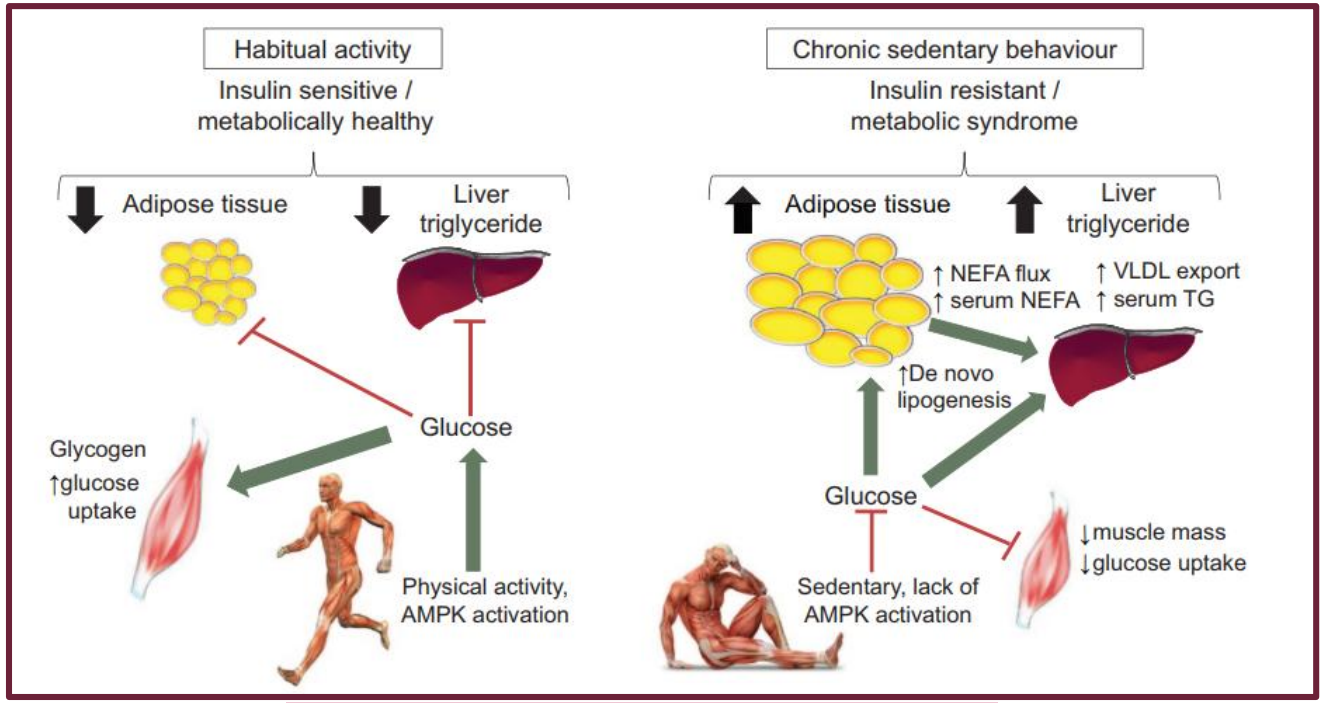
Fidgeting leg

https://journals.physiology.org/doi/full/10.1152/ajpheart.00326.2017
https://pubmed.ncbi.nlm.nih.gov/27233765/

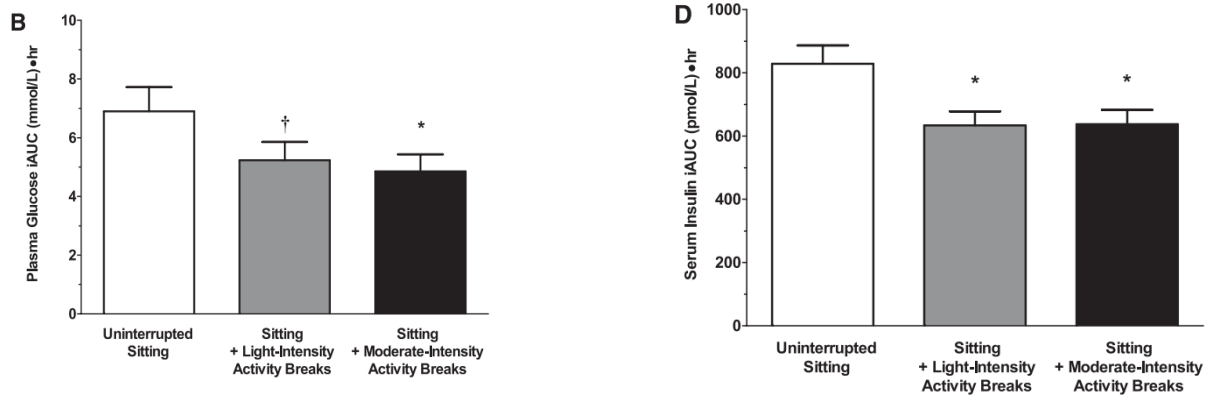
DIABETES CONNECTION

- Movements clear glucose from circulation
- Prolonged sitting hampers glucose uptake increasing blood sugar.
- Contributes to insulin resistance.

Type II Diabetes Mellitus



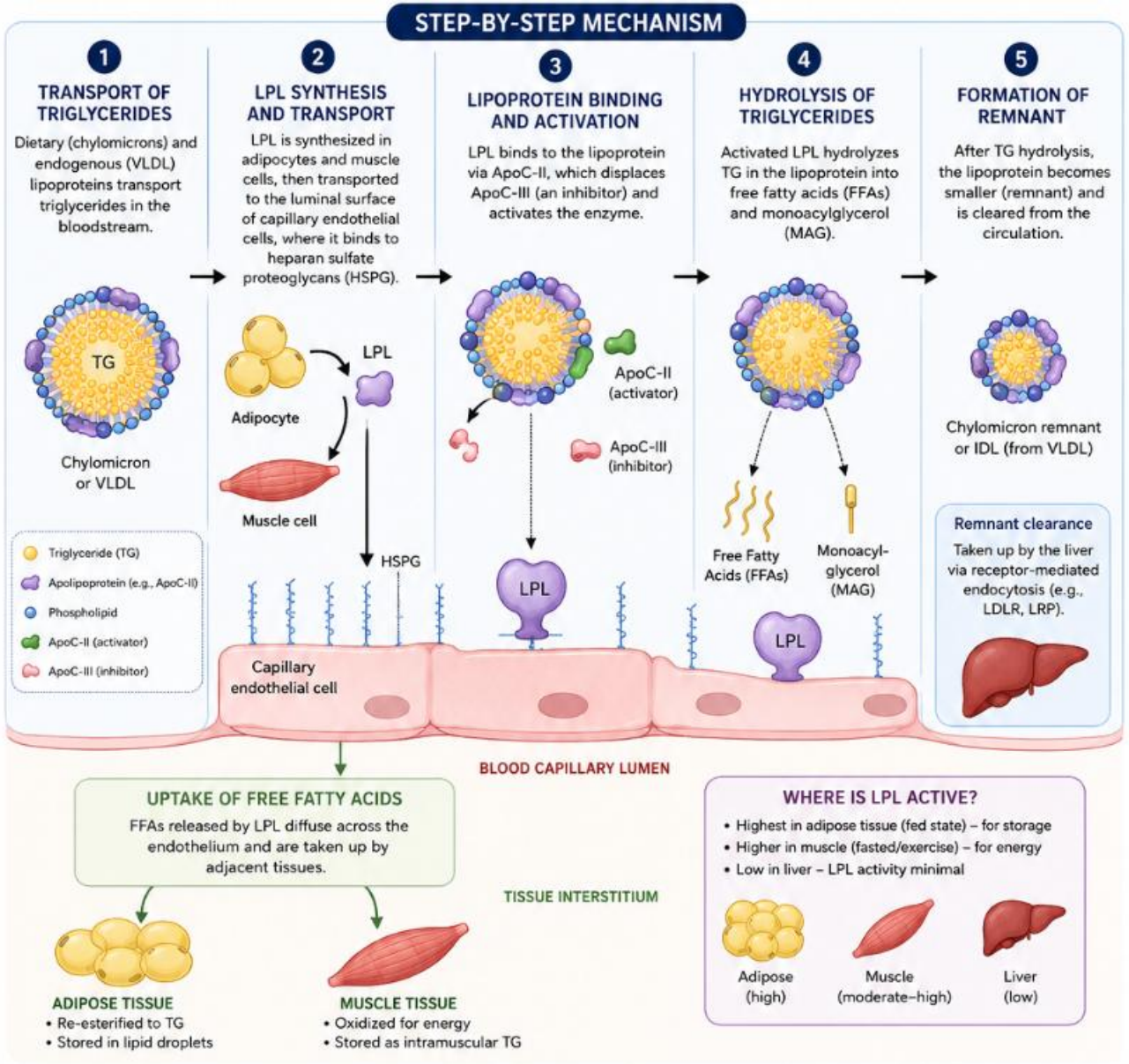
5 hours of after-meal sitting



https://journals.sagepub.com/doi/full/10.1177/2042018819888824

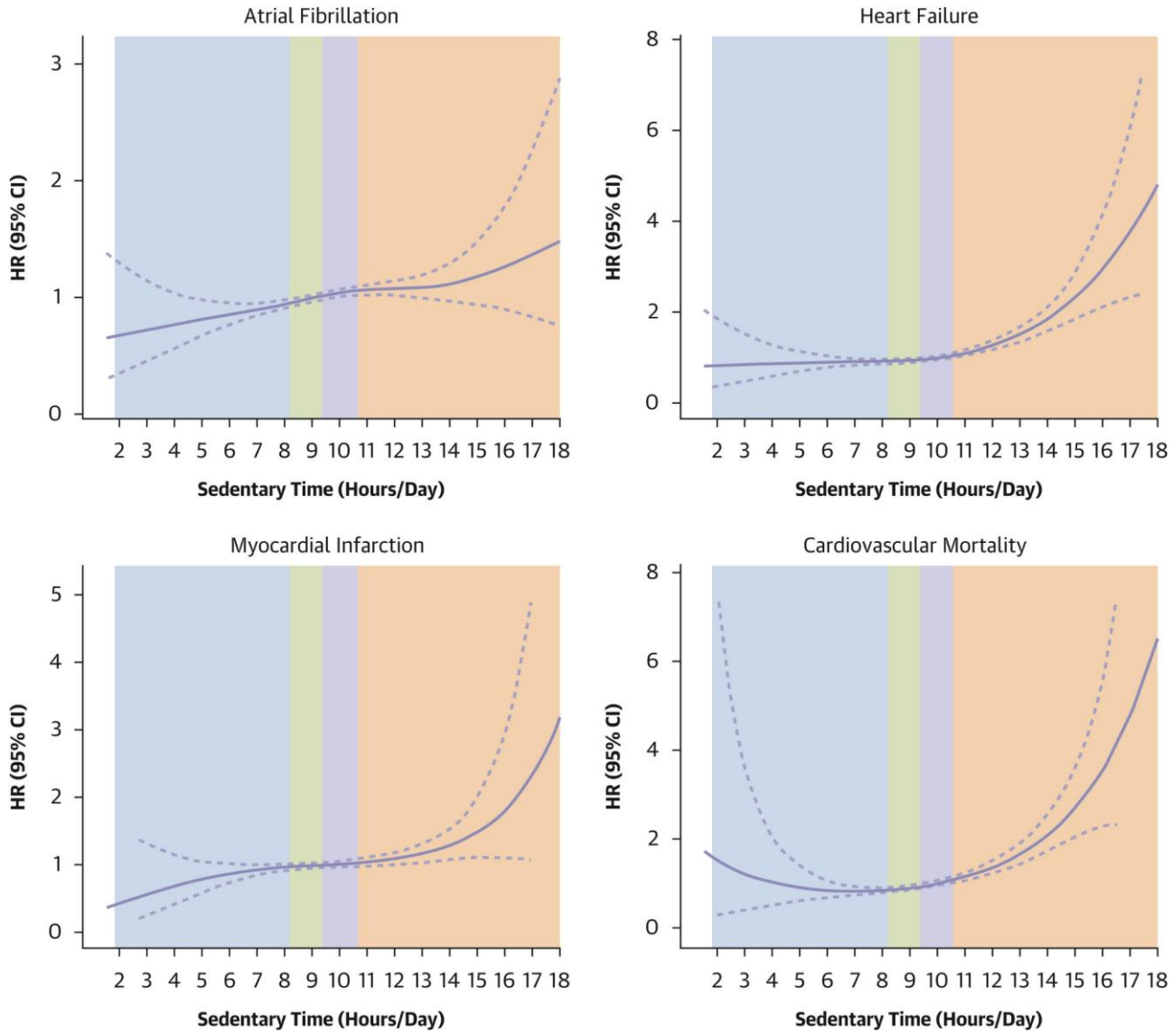
EFFECTS ON FAT METABOLISM

- LPL (Lipoprotein Lipase) clears triglycerides from blood
- 90-95% drop in muscle LPL activity (from a study on rat models).
- Not reversible by short extreme physical activity
- Limitations

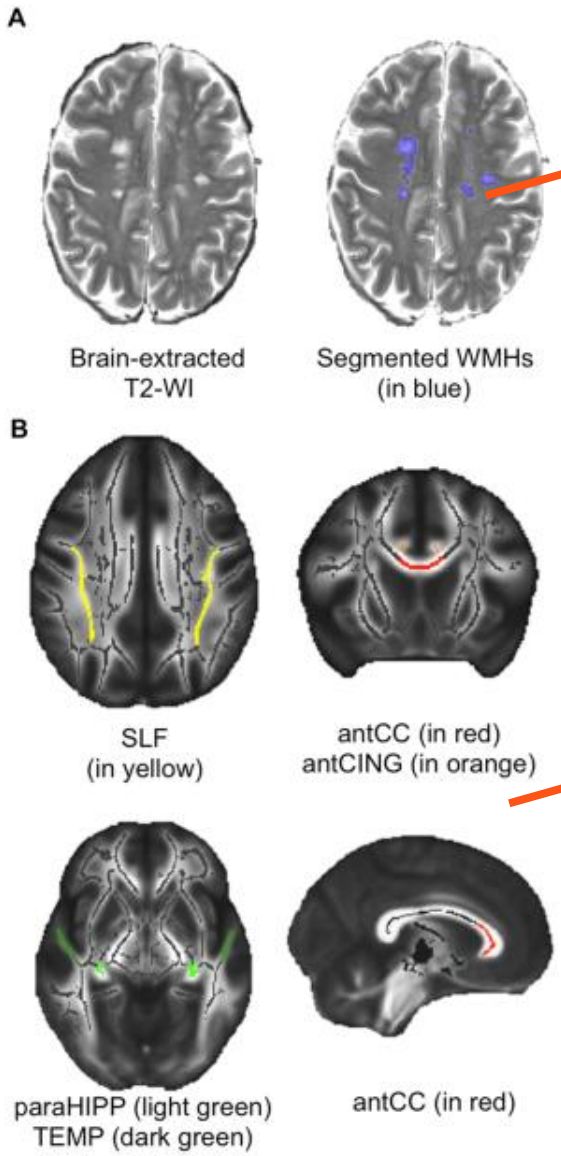


EFFECTS ON HEART AND CIRCULATION

- Prolonged sitting reduces blood flow to heart
- Increases risk of atrial fibrillation, myocardial infarction, heart failure and cardio-vascular mortality
- Dysfunction of arterial walls contributes to high blood pressure



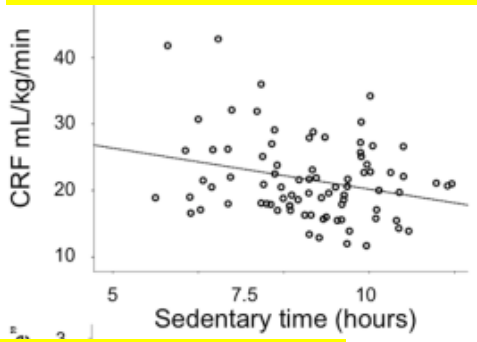
HOW IS BRAIN STRUCTURE AFFECTED?



White Matter Hyperintensities

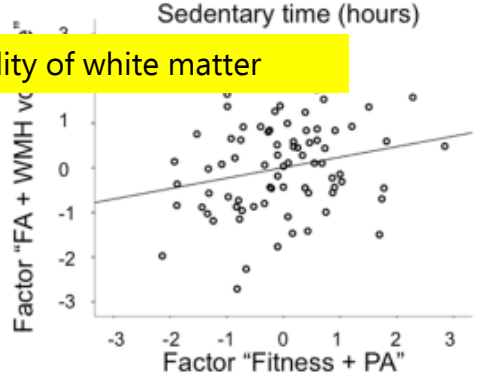
cables that connect different parts of the bra

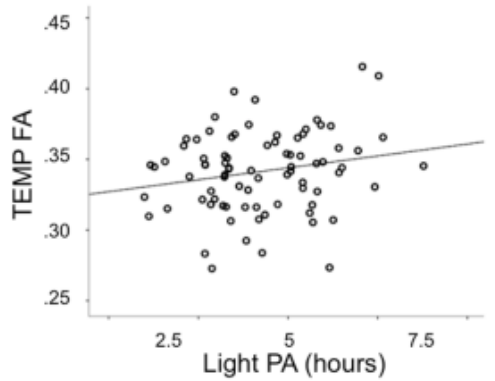
Oxygen supplying ability of body while exercising



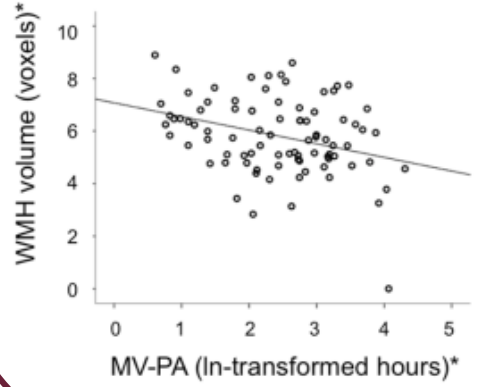
Structural Integrity of White Matter

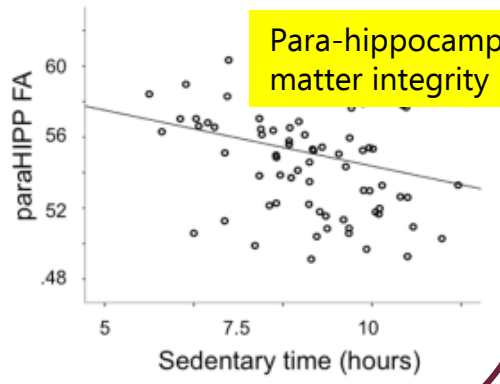
Quality of white matter





Para-hippocampal white matter integrity





Lesions reduce with high physical activity

BRAIN AND MENTAL HEALTH

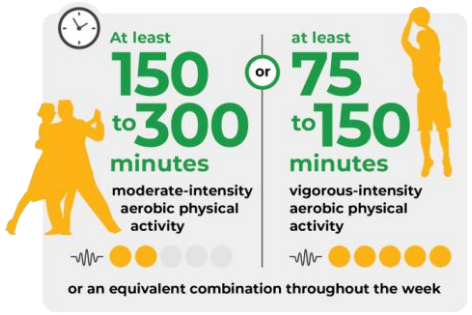
- Depression, Anxiety, Stress – Lower well being
- Nuance between passive screen time and mentally engaging seated activities
- High risk of dementia ?

Mentally passive sedentary behaviors could increase the risk of depression.	Effects of mentally active sedentary behaviors are non-significant.

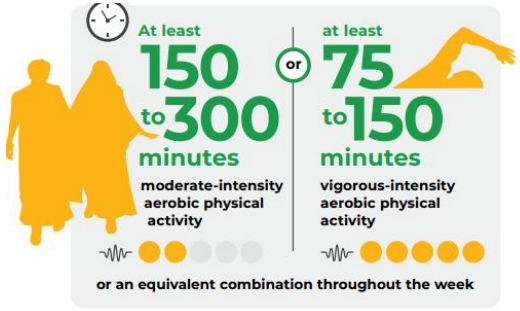
SUGGESTED PRACTICAL SOLUTIONS-I

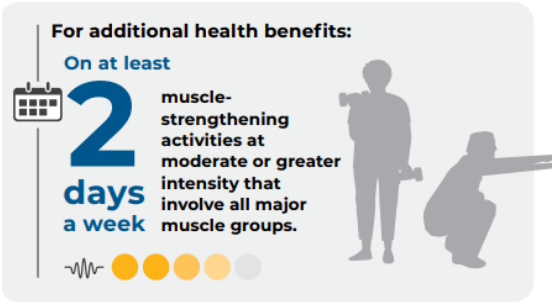
1 Reduce total sedentary time

Age 18- 64 years

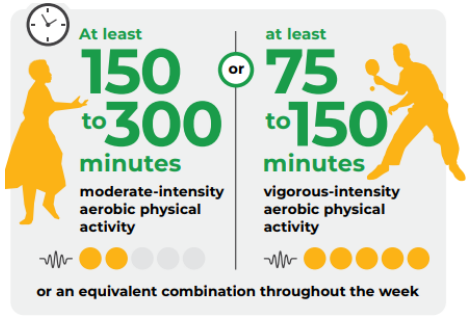


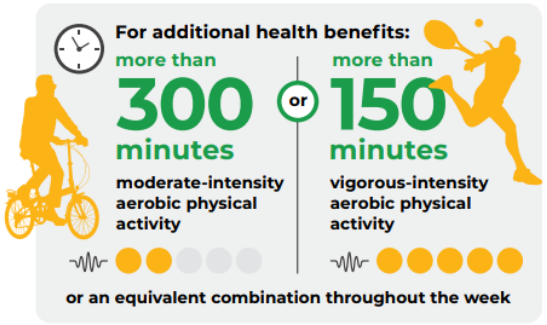
Aged 65 years and older





Specific advice for chronic conditions





SUGGESTED PRACTICAL SOLUTIONS- II

2 Break up remaining sedentary time

REDESIGN THE WORK ENVIRONMENT

WORK SMART, MOVE MORE, STAY PRODUCTIVE

Simple habits for a healthier, more efficient workday

1. **Walking to a colleague's desk instead of sending a message (for non-official communication)**

Encourages movement, improves focus, and builds stronger connections.

2. **Refilling a water bottle (Makes you drink more water too!)**

Keeps you hydrated, boosts energy, and supports overall well-being.

3. **Standing and reorganizing or cleaning up your workspace**

Reduces clutter, lowers stress, and creates a more productive environment.

4. **Delivering documents personally**

Ensures accuracy, builds rapport, and speeds up communication.

5. **Neck movements**

Relieves neck strain, improves posture, and reduces tension.

Small steps. Big impact.
Take care of your body, mind, and work.

THANK YOU