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PRINCIPLES OF AEROBIC EXERCISE AND WEIGHT MANAGEMENT

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KEY TERMS AND CONCEPTS

- Physical Activity
- Exercise
- Physical Fitness
- Maximum Oxygen Consumption
- Energy Systems

KEY TERMS AND CONCEPTS

Exercise

- Physical activity that is planned, structured and repetitive and often has the goal of improving physical fitness
- Components: frequency, intensity, time, type, volume, pattern, progression

Physical Activity

- Skeletal muscle movement that results in energy expenditure above resting levels
- Domains: transportation, leisure (i.e., sports), occupational, domestic (i.e., household chores)

Sedentary Behavior

- Activities while sitting or lying that have little or no movement and expend low energy (≤ 1.0 - 1.5 METS)
- Examples: sitting, screen time

Physical Fitness

- Ability to carry out daily tasks with energy to enjoy leisure activities
- Includes cardiorespiratory fitness, muscular strength and endurance, body composition, flexibility and neuromotor control

Physical Function

- Capacity to carry out daily tasks
- Reflective of physical fitness, habitual physical activity, motor control and function
- Is a predictor of the ability to live independently

NON-EXERCISE ACTIVITY THERMOGENESIS (NEAT)



THREE TYPES OF EXERCISE



Stretching, for flexibility



Weight-bearing, for
strengthening muscles
and bone mass



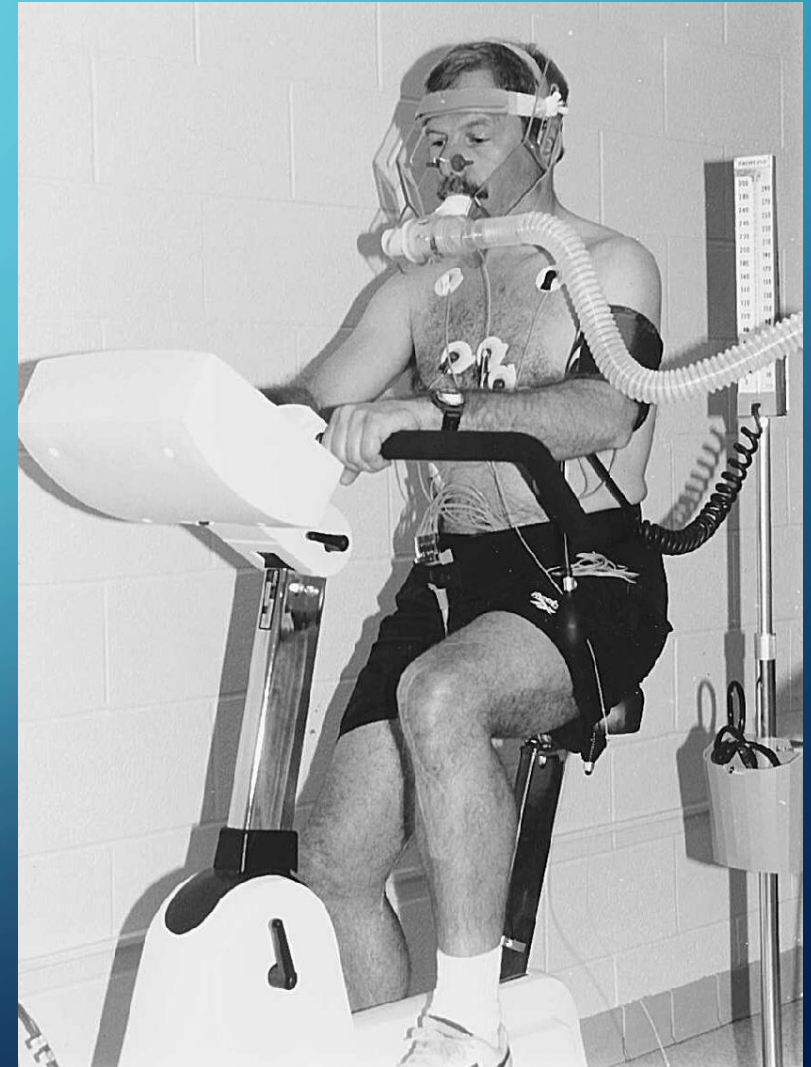
Aerobic, for the heart

TESTING AS A BASIS FOR EXERCISE PROGRAMS

VO₂

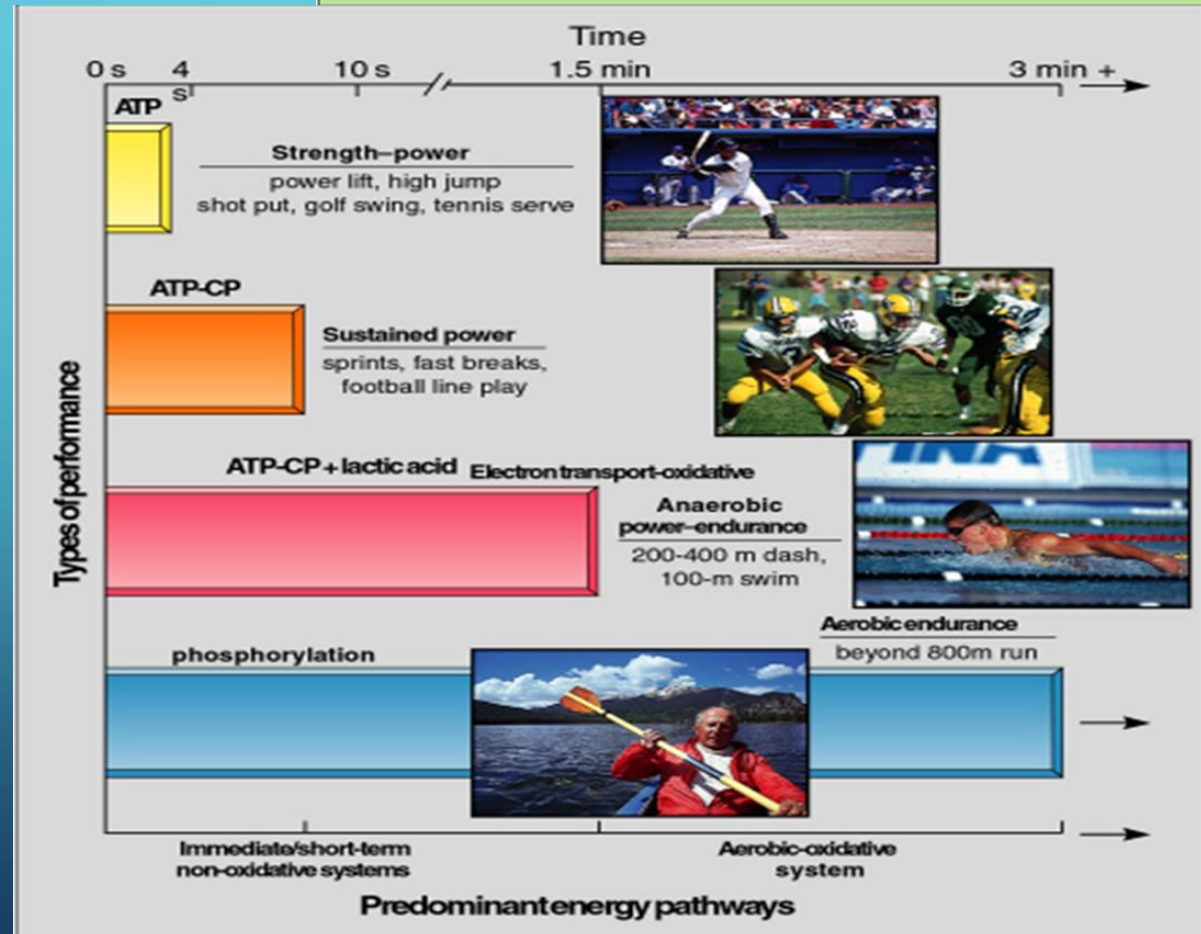
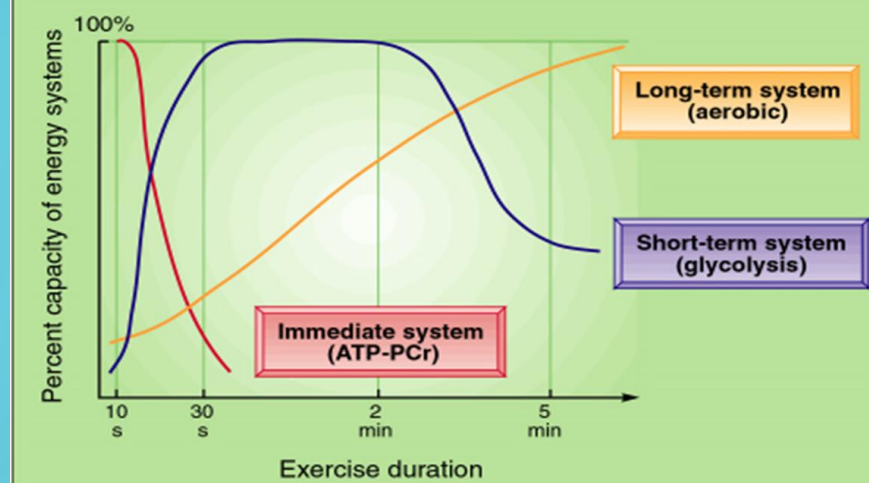
- ❑ The capacity of the individual to transport and utilize oxygen is reflected in the **oxygen uptake**.

PAR-Q +



ENERGY SYSTEMS

- Phosphagen, or ATP-PC
- Anaerobic Glycolytic
- Aerobic System



ADAPTATIONS TO AEROBIC EXERCISE

- Cardiovascular Response
- Respiratory Response

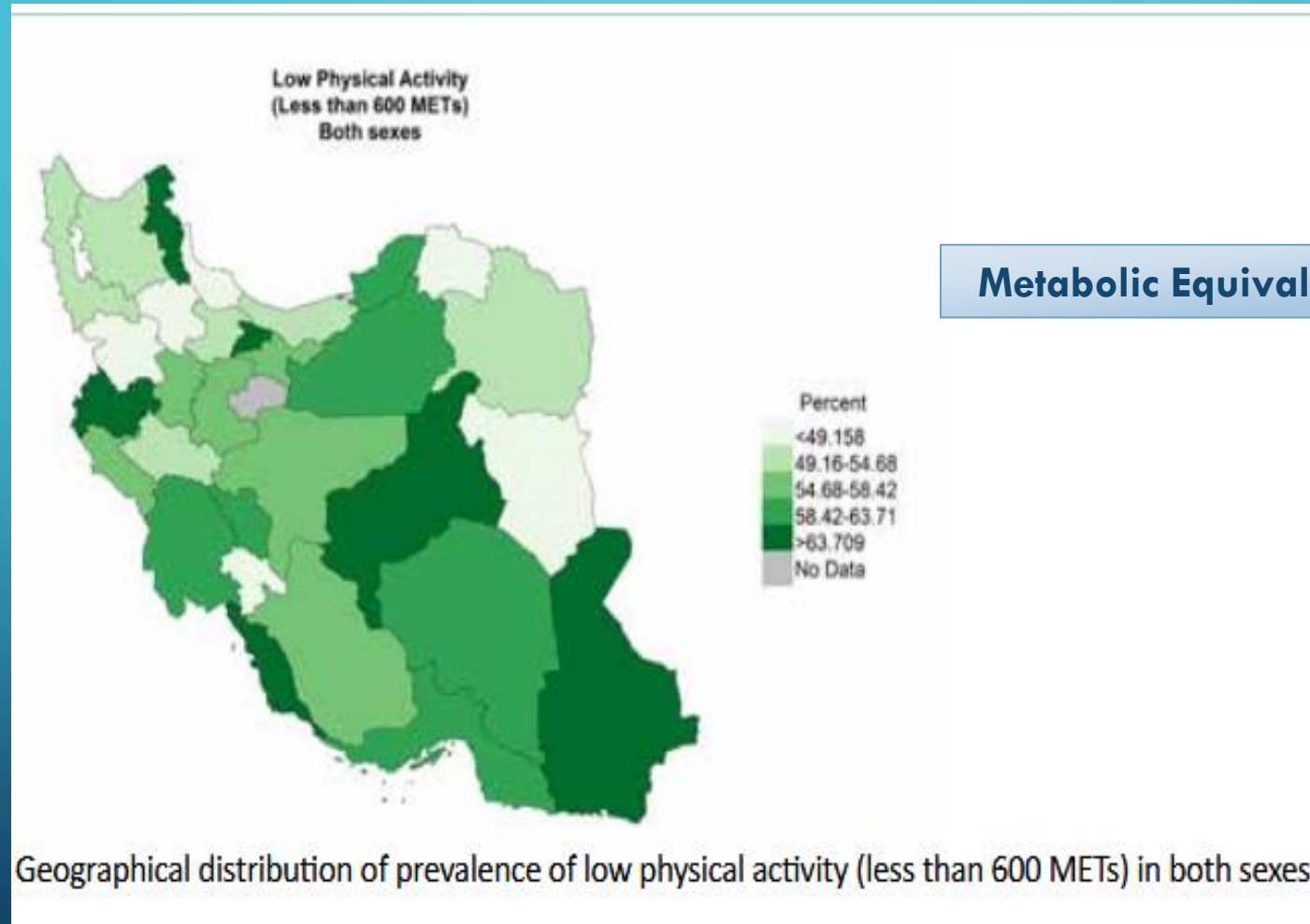
CARDIOVASCULAR ADAPTATIONS

- Heart Size
 - eccentric hypertrophy
- Plasma Volume
 - Up to 20%
- Stroke Volume
 - Increases 50-60%
- Heart Rate
- Cardiac Output
- Oxygen extraction
- Blood flow and distribution
 - Increased capillarization
- Blood Pressure
 - Decrease 6 to 10 mm Hg with regular aerobic ex.

PULMONARY ADAPTATIONS

- Increased maximal exercise minute ventilation
- Increased ventilatory equivalent: V_E/VO_2
- In general, tidal volume increases and breathing frequency decreases

WHAT IS THE STATE OF PHYSICAL ACTIVITY ?



Metabolic Equivalents (METs)

ONLY 1 in 5 are meeting the PA Guidelines!

PHYSICAL ACTIVITY TO IMPROVE HEALTH

- **Adiposopathy**

- Improve body composition
- Possibly improve adipocyte function (“train” fat cells)
 - Improve insulin sensitivity
 - Increase mitochondrial biogenesis
 - Increase browning (“beiging”) of fat cells

- **Non-adipose Parameters**

- Improve metabolic health
- Improve musculoskeletal health
- Improve cardiovascular health
- Improve pulmonary health
- Improve mental health (e.g., mood, happiness, sense of well-being)
- Improve sexual health

EFFECTS OF PA ON CVD RISK

The risk of CVD decreases linearly with higher levels of activity

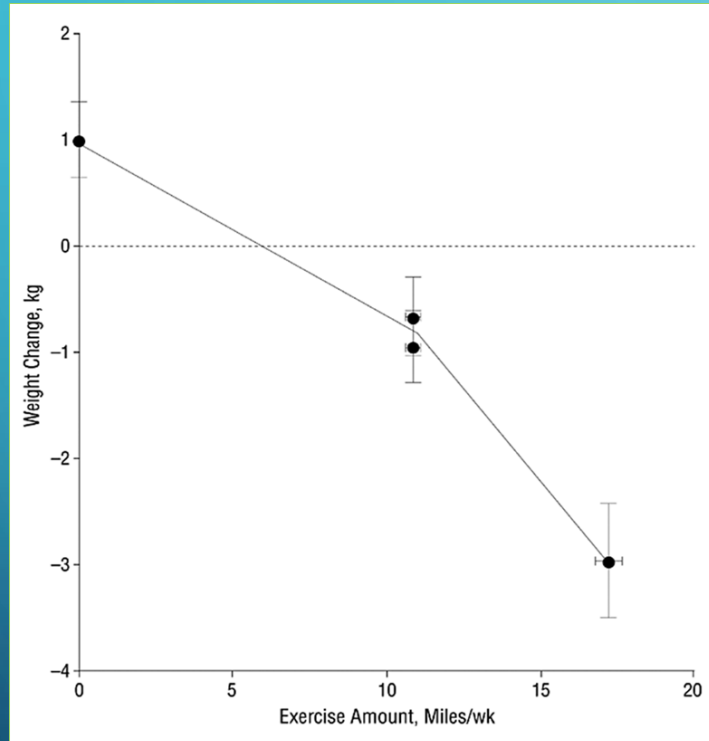
- Reference group: <200 kcal/week
- 200-500 kcal/week: 27%
- 600- 1499 kcal/ week: 32%
- >1500 kcal/ week: 41%

EVIDENCE FOR PHYSICAL ACTIVITY

Energy balance:

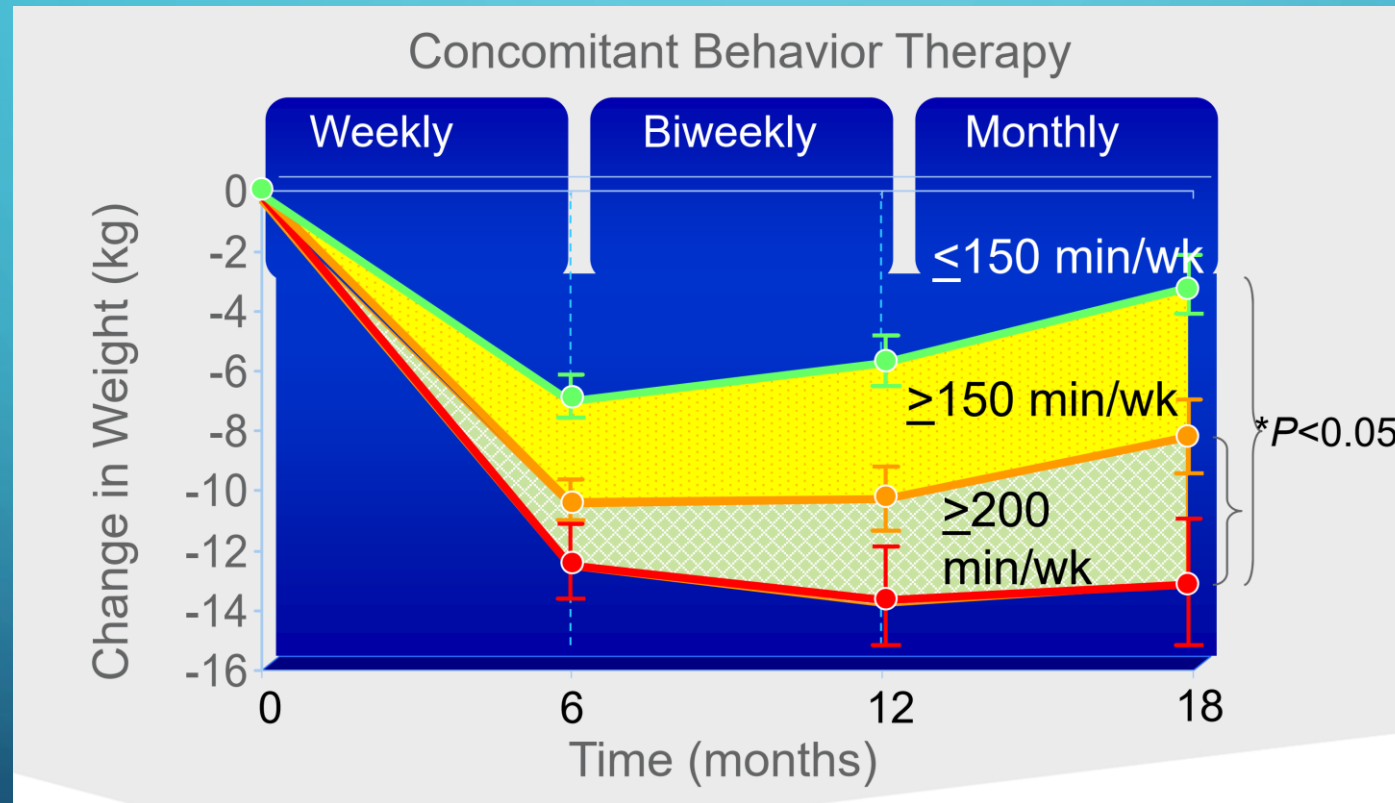
Weight gain prevention ^c	Yes	Limited
Weight loss ^d	Yes	Strong
Weight maintenance following weight loss ^d	Yes	Moderate
Abdominal obesity ^d	Yes	Moderate

WEIGHT LOSS AND PHYSICAL ACTIVITY



- Relationship between mean amount of weight change & physical activity
- Physical activity:
 - NOT the major contributor to active weight loss, but changes in body composition do occur
 - 3 kg or 6.6 lbs of weight loss
 - 8 months
 - 20 miles of jogging/week
 - ➡ – BUT 4.8 kg or 10.5 lbs of FAT loss

PHYSICAL ACTIVITY IS ESSENTIAL IN WEIGHT MAINTENANCE



CORE COMPONENTS OF AN EXERCISE PRESCRIPTION

FITTE

Frequency

Intensity

Time

Type

Enjoyment

COMPONENTS OF THE EXERCISE TRAINING SESSION

Warm-up: at least 5–10 min of light-to-moderate intensity cardiorespiratory and muscular endurance activities

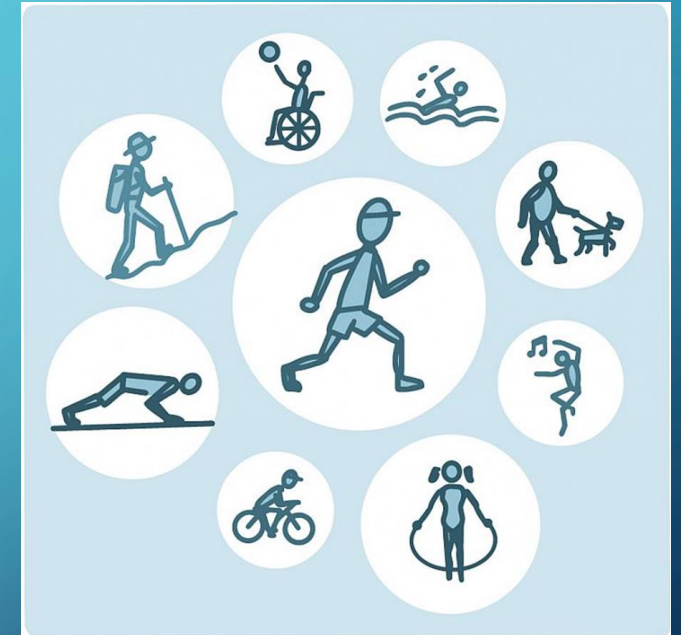
Conditioning: at least 20–60 min of aerobic, resistance, neuromotor, and/or sports activities (exercise bouts of 10 min are acceptable if the individual accumulates at least 20–60 min \cdot d⁻¹ of daily aerobic exercise)

Cool-down: at least 5–10 min of light-to-moderate intensity cardiorespiratory and muscular endurance activities

Stretching: at least 10 min of stretching exercises performed after the warm-up or cool-down phase

MODES OF AEROBIC EXERCISES

Exercise Group	Exercise Description	Recommended for	Examples
A	Endurance activities requiring minimal skill or physical fitness to perform	All adults	Walking, leisurely cycling, aqua-aerobics, slow dancing
B	Vigorous intensity endurance activities requiring minimal skill	Adults (as per the participation screening guidelines in <i>Chapter 2</i>) who are habitually physically active and/or at least average physical fitness	Jogging, running, rowing, aerobics, spinning, elliptical exercise, stepping exercise, fast dancing
C	Endurance activities requiring skill to perform	Adults with acquired skill and/or at least average physical fitness levels	Swimming, cross-country skiing, skating
D	Recreational sports	Adults with a regular exercise program and at least average physical fitness	Racquet sports, basketball, soccer, downhill skiing, hiking



Metabolic Equivalents (METs)

Very Light/Light (<3.0 METs)

Walking

Walking slowly around home, store, or office = 2.0^a

Household and occupation

Standing performing light work, such as making bed, washing dishes, ironing, preparing food, or store clerk = 2.0 – 2.5

Leisure time and sports

Arts and crafts, playing cards = 1.5
 Billiards = 2.5
 Boating — power = 2.5
 Croquet = 2.5
 Darts = 2.5
 Fishing — sitting = 2.5
 Playing most musical instruments = 2.0 – 2.5

Moderate (3.0 – 5.9 METs)

Walking

Walking $3.0 \text{ mi} \cdot \text{h}^{-1} = 3.0^a$
 Walking at very brisk pace ($4 \text{ mi} \cdot \text{h}^{-1}$) = 5.0^a

Household and occupation

Cleaning, heavy — washing windows, car, clean garage = 3.0
 Sweeping floors or carpet, vacuuming, mopping = 3.0 – 3.5
 Carpentry — general = 3.6
 Carrying and stacking wood = 5.5
 Mowing lawn — walk power mower = 5.5

Leisure time and sports

Badminton — recreational = 4.5
 Basketball — shooting around = 4.5
 Dancing — ballroom slow = 3.0 ; ballroom fast = 4.5
 Fishing from riverbank and walking = 4.0
 Golf — walking, pulling clubs = 4.3
 Sailing boat, wind surfing = 3.0
 Table tennis = 4.0
 Tennis doubles = 5.0
 Volleyball — noncompetitive = 3.0 – 4.0

Vigorous (≥ 6.0 METs)

Walking, jogging, and running

Walking at very, very brisk pace ($4.5 \text{ mi} \cdot \text{h}^{-1}$) = 6.3^a
 Walking/hiking at moderate pace and grade with no or light pack ($<10 \text{ lb}$) = 7.0
 Hiking at steep grades and pack 10 – 42 lb = 7.5 – 9.0
 Jogging at $5 \text{ mi} \cdot \text{h}^{-1} = 8.0^a$
 Jogging at $6 \text{ mi} \cdot \text{h}^{-1} = 10.0^a$
 Running at $7 \text{ mi} \cdot \text{h}^{-1} = 11.5^a$

Household and occupation

Shoveling sand, coal, etc. = 7.0
 Carrying heavy loads, such as bricks = 7.5
 Heavy farming, such as bailing hay = 8.0
 Shoveling, digging ditches = 8.5

Leisure time and sports

Bicycling on flat — light effort (10 – $12 \text{ mi} \cdot \text{h}^{-1}$) = 6.0
 Basketball game = 8.0
 Bicycling on flat — moderate effort (12 – $14 \text{ mi} \cdot \text{h}^{-1}$) = 8.0 ; fast (14 – $16 \text{ mi} \cdot \text{h}^{-1}$) = 10.0
 Skiing cross-country — slow ($2.5 \text{ mi} \cdot \text{h}^{-1}$) = 7.0 ; fast (5.0 – $7.9 \text{ mi} \cdot \text{h}^{-1}$) = 9.0
 Soccer — casual = 7.0 ; competitive = 10.0
 Swimming leisurely = 6.0^b ; swimming — moderate/hard = 8.0 – 11.0^b
 Tennis singles = 8.0
 Volleyball — competitive at gym or beach = 8.0

فعالیت‌های سبک	فعالیت‌های متوسط	فعالیت‌های شدید
<p>فعالیت‌های روزمره منزل مثل غذا درست کردن، گردگیری جارو کردن فرش‌ها، تمیز کردن زمین عوض کردن ملحفه‌ها، بیرون بردن زباله‌ها ظرف شستن در حالت ایستاده کشیدن جارو برقی آب دادن به گل‌ها، چیدن سبزی و میوه مراقبت از کودک شامل لباس پوشیدن، غذا دادن حمام کردن تعمیر خودرو</p>	<p>کارهای روزمره منزل که نیازمند فعالیت نسبتاً شدید باشد مثل شست و شو یا تی کشیدن پارو کردن برف حمل و جابجایی کودک (با وزن بیشتر از 22 کیلوگرم) شستن خودرو، جا به جا کردن مبلمان منزل</p>	<p>کارهای روزمره معمولاً در این دسته قرار نمی‌گیرند مگر اینکه به صورت شدید انجام شوند یا آمادگی بدنی فرد بسیار پایین باشد نمونه: چمن زنی با دستگاه دستی</p>
<p>راه رفتن معمولی</p>	<p>پیاده‌روی سریع حدود ۱۰۰ تا ۱۲۰ گام در دقیقه پیاده‌روی در مسیر سربالایی یا مسیر جنگلی</p>	<p>پیاده‌روی خیلی سریع (بیش از ۱۲۰ گام در دقیقه) دویدن</p>
<p>تمرینات کششی</p>	<p>ورزش‌های ایروبیک با شدت پایین ایروبیک در آب کار با اغلب دستگاه‌های هوازی مانند اسکی فضایی</p>	<p>ورزش‌های ایروبیک با شدت بالا پا دوچرخه زدن در آب، نرم دویدن در آب کار با اغلب دستگاه‌های هوازی مانند اسکی فضایی با شدت بالا</p>
<p>انجام فعالیت‌های روزمره شغلی که نیازمند نشست‌های طولانی‌مدت است</p>	<p>انجام فعالیت‌های روزمره شغلی که نیازمند ایستادن طولانی مدت یا راه رفتن زیاد است</p>	<p>انجام فعالیت‌های روزمره شغلی که نیازمند حمل بار و حرکات سریع است</p>
<p>دوچرخه سواری سبک</p>	<p>دوچرخه سواری 8 تا 14 کیلومتر در ساعت</p>	<p>دوچرخه سواری بیش از 14 کیلومتر در ساعت</p>
<p>تمرین‌های سبک با وزنه</p>	<p>وزنه زدن</p>	<p>ترکیب وزنه و حرکات ایروبیک</p>
<p>رقصیدن آرام</p>	<p>رقصیدن با شدت متوسط</p>	<p>رقص سریع با شدت زیاد</p>
<p>ورزش‌های تفریحی مانند گلف، تنیس روی میز، ماهی‌گیری</p>	<p>گلف همراه با حمل چوب‌ها، یوگا، ژیمناستیک، بوکس و مشت‌زدن به کیسه، تنیس و والیبال، بدمینتون رقابتی، اسب سواری</p>	<p>اسکی، کاراته، جودو، بوکس رقابتی، بسکتبال و فوتبال</p>

FITTVP

FITT-VP	Evidence-Based Recommendation
<i>Frequency</i>	<ul style="list-style-type: none">■ $\geq 5 \text{ d} \cdot \text{wk}^{-1}$ of moderate exercise, or $\geq 3 \text{ d} \cdot \text{wk}^{-1}$ of vigorous exercise, or a combination of moderate and vigorous exercise on $\geq 3\text{--}5 \text{ d} \cdot \text{wk}^{-1}$ is recommended.
<i>Intensity</i>	<ul style="list-style-type: none">■ Moderate and/or vigorous intensity is recommended for most adults.■ Light-to-moderate intensity exercise may be beneficial in deconditioned individuals.
<i>Time</i>	<ul style="list-style-type: none">■ $30\text{--}60 \text{ min} \cdot \text{d}^{-1}$ of purposeful moderate exercise, or $20\text{--}60 \text{ min} \cdot \text{d}^{-1}$ of vigorous exercise, or a combination of moderate and vigorous exercise per day is recommended for most adults.■ $<20 \text{ min}$ of exercise per day can be beneficial, especially in previously sedentary individuals.
<i>Type</i>	<ul style="list-style-type: none">■ Regular, purposeful exercise that involves major muscle groups and is continuous and rhythmic in nature is recommended.
<i>Volume</i>	<ul style="list-style-type: none">■ A target volume of $\geq 500\text{--}1,000 \text{ MET-min} \cdot \text{wk}^{-1}$ is recommended.■ Increasing pedometer step counts by $\geq 2,000 \text{ steps} \cdot \text{d}^{-1}$ to reach a daily step count $\geq 7,000 \text{ steps} \cdot \text{d}^{-1}$ is beneficial.■ Exercising below these volumes may still be beneficial for individuals unable or unwilling to reach this amount of exercise.
<i>Pattern</i>	<ul style="list-style-type: none">■ Exercise may be performed in one continuous session, in one interval session, or in multiple sessions of $\geq 10 \text{ min}$ to accumulate the desired duration and volume of exercise per day.■ Exercise bouts of $<10 \text{ min}$ may yield favorable adaptations in very deconditioned individuals.
<i>Progression</i>	<ul style="list-style-type: none">■ A gradual progression of exercise volume by adjusting exercise duration, frequency, and/or intensity is reasonable until the desired exercise goal (maintenance) is attained.■ This approach of “start low and go slow” may enhance adherence and reduce risks of musculoskeletal injury and adverse cardiac events.

EXERCISE PRESCRIPTION

- The duration of moderate-to-vigorous intensity PA should initially progress to at least $30 \text{ min} \cdot \text{d}^{-1}$.
- To promote long-term weight loss maintenance, individuals should progress to at least $250 \text{ min} \cdot \text{wk}^{-1}$ ($\geq 2,000 \text{ kcal} \cdot \text{wk}^{-1}$) of moderate to vigorous exercise.
- To achieve the weekly maintenance activity goal of $\geq 250 \text{ min} \cdot \text{wk}^{-1}$, exercise and PA should be performed on $5\text{--}7 \text{ d} \cdot \text{wk}^{-1}$.

Aerobic

Frequency	$\geq 5 \text{ d} \cdot \text{wk}^{-1}$
Intensity	Initial intensity should be moderate (40%–59% O_2R or HRR); progress to vigorous ($\geq 60\%$ O_2R or HRR) for greater health benefits.
Time	$30 \text{ min} \cdot \text{d}^{-1}$ ($150 \text{ min} \cdot \text{wk}^{-1}$); increase to $60 \text{ min} \cdot \text{d}^{-1}$ or more ($250\text{--}300 \text{ min} \cdot \text{wk}^{-1}$).
Type	Prolonged, rhythmic activities using large muscle groups (e.g., walking, cycling, swimming)

CALCULATION OF METS, MET-MIN⁻¹, AND KCAL · MIN⁻¹

- [1 MET is equal to] an oxygen uptake of 3.5 [mL · kg⁻¹ · min⁻¹].
- MET-min: (METS × min); usually standardized per week or per day as a measure of exercise volume.

$$\text{kcal} \cdot \text{min}^{-1} = [(\text{METS} \times 3.5 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} \times \text{body wt in kg}) \div 1000] \times 5.$$

Example:

Jogging (at ~7 METs) for 30 min on 3 d · wk⁻¹ for a 70 kg male:

$$7 \text{ METs} \times 30 \text{ min} \times 3 \text{ times per week} = 630 \text{ MET-min} \cdot \text{wk}^{-1}$$

$$[(7 \text{ METs} \times 3.5 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} \times 70 \text{ kg}) \div 1000] \times 5 = 8.575 \text{ kcal} \cdot \text{min}^{-1}$$

$$8.575 \text{ kcal} \cdot \text{min}^{-1} \times 30 \text{ min} \times 3 \text{ times per week} = 771.75 \text{ kcal} \cdot \text{wk}^{-1}$$

ESTIMATION OF ENERGY EXPENDITURE

Sum of Resting + Horizontal + Vertical/Resistance Components				
Activity	Resting Component	Horizontal Component	Vertical Component/Resistance Component	Limitations
Walking	3.5	$0.1 \times \text{speed}^a$	$1.8 \times \text{speed}^a \times \text{grade}^b$	Most accurate for speeds of $1.9\text{--}3.7 \text{ mi} \cdot \text{h}^{-1}$ ($50\text{--}100 \text{ m} \cdot \text{min}^{-1}$)
Running	3.5	$0.2 \times \text{speed}^a$	$0.9 \times \text{speed}^a \times \text{grade}^b$	Most accurate for speeds $>5 \text{ mi} \cdot \text{h}^{-1}$ ($134 \text{ m} \cdot \text{min}^{-1}$)
Stepping	3.5	$0.2 \times \text{steps} \cdot \text{min}^{-1}$	$1.33 \times (1.8 \times \text{step height}^c \times \text{steps} \cdot \text{min}^{-1})$	Most accurate for stepping rates of $12\text{--}30 \text{ steps} \cdot \text{min}^{-1}$
Leg cycling	3.5	3.5	$(1.8 \times \text{work rate}^d) / \text{body mass}^e$	Most accurate for work rates of $300\text{--}1,200 \text{ kg} \cdot \text{m} \cdot \text{min}^{-1}$ ($50\text{--}200 \text{ W}$)
Arm cycling	3.5		$(3 \times \text{work rate}^d) / \text{body mass}^e$	Most accurate for work rates between $150\text{--}750 \text{ kg} \cdot \text{m} \cdot \text{min}^{-1}$ ($25\text{--}125 \text{ W}$)

^aSpeed in $\text{m} \cdot \text{min}^{-1}$.

^bGrade is percent grade expressed in decimal format (e.g., $10\% = 0.10$).

^cStep height in m.

Multiply by the following conversion factors:

lb to kg: 0.454; in to cm: 2.54; ft to m: 0.3048; mi to km: 1.609; $\text{mi} \cdot \text{h}^{-1}$ to $\text{m} \cdot \text{min}^{-1}$: 26.8; $\text{kg} \cdot \text{m} \cdot \text{min}^{-1}$ to W: 0.164; W to $\text{kg} \cdot \text{m} \cdot \text{min}^{-1}$: 6.12; $\dot{\text{V}}\text{O}_{2\text{max}}$ $\text{L} \cdot \text{min}^{-1}$ to $\text{kcal} \cdot \text{min}^{-1}$: 4.9; $\dot{\text{V}}\text{O}_2$ MET to $\text{mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$: 3.5.

^dWork rate in kilogram meters per minute ($\text{kg} \cdot \text{m} \cdot \text{min}^{-1}$) is calculated as resistance (kg) \times distance per revolution of flywheel \times pedal frequency per minute. Note: Distance per revolution is 6 m for Monark leg ergometer, 3 m for the Tunturi and BodyGuard ergometers, and 2.4 m for Monark arm ergometer.

^eBody mass in kg

$\dot{\text{V}}\text{O}_{2\text{max}}$, maximal volume of oxygen consumed per unit of time.

Adapted from (8).

Using metabolic calculations (46) or (Table 6.3) to determine running speed on a treadmill

Available data:

A man 32 yr of age

Weight: 130 lb (59 kg)

Height: 70 in (177.8 cm)

$\dot{V}O_{2\max}$: 54 mL \cdot kg⁻¹ \cdot min⁻¹

Desired treadmill grade: 2.5%

Desired exercise intensity: 80%

Formula: $\dot{V}O_2 = 3.5 + (0.2 \times \text{speed}) + (0.9 \times \text{speed} \times \% \text{ grade})$

1. Determine target $\dot{V}O_2$:

$$\text{Target } \dot{V}O_2 = \text{desired \%} \times \dot{V}O_{2\max}$$

$$\text{Target } \dot{V}O_2 = 0.80 \times 54 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} = 43.2 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$$

2. Determine treadmill speed:

$$\dot{V}O_2 = 3.5 + (0.2 \times \text{speed}) + (0.9 \times \text{speed} \times \% \text{ grade})$$

$$43.2 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1} = 3.5 + (0.2 \times \text{speed}) + (0.9 \times \text{speed} \times 0.025)$$

$$39.7 = (0.2 \times \text{speed}) + (0.9 \times \text{speed} \times 0.025)$$

$$39.7 = (0.2 \times \text{speed}) + (0.0225 \times \text{speed})$$

$$39.7 = 0.2225 \times \text{speed}$$

$$178.4 \text{ m} \cdot \text{min}^{-1} = \text{speed}$$

$$\text{Speed on treadmill: } 10.7 \text{ km} \cdot \text{h}^{-1} \text{ (6.7 mi} \cdot \text{h}^{-1}\text{)}$$

AEROBIC EXERCISE VOLUME RECOMMENDATION

- There is a dose-response association between the volume of exercise and health/fitness outcomes
- A target volume of $\geq 500\text{--}1,000 \text{ MET-min} \cdot \text{wk}^{-1}$ is recommended for most adults.
- This volume is approximately equal to $1,000 \text{ kcal} \cdot \text{wk}^{-1}$ of moderate intensity, physical activity, $\sim 150 \text{ min} \cdot \text{wk}^{-1}$ of moderate intensity exercise, or pedometer counts of $\geq 5,400\text{--}7,900 \text{ steps} \cdot \text{d}^{-1}$.

AEROBIC (CARDIORESPIRATORY ENDURANCE) EXERCISE (CONT.)

- **Rate of progression**
 - An increase in exercise **time/duration per session of 5–10 min every 1–2 wk over the first 4–6 wk** of an exercise training program is reasonable for the average adult.
 - After the individual has been exercising regularly for at **least 1 month**, the FIT of exercise is gradually adjusted upward over the next 4–8 months — or **longer for older adults and very deconditioned** individuals — to meet the recommended quantity and quality of exercise presented in the *Guidelines*.

WHAT DO WE KNOW ABOUT SUCCESSFUL MAINTAINERS?

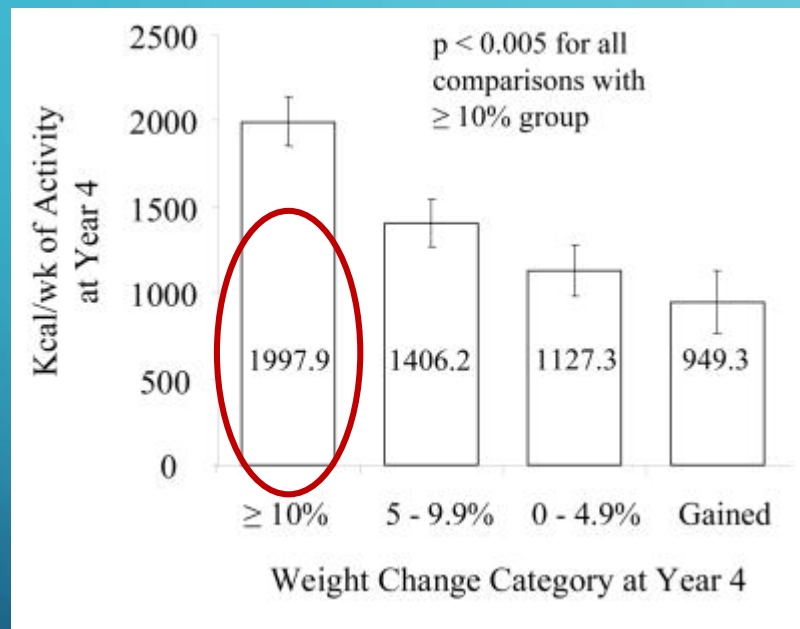
National Weight Control Registry Data

- 78% eat breakfast every day
- 75% weigh themselves at least once a week
- 62% watch less than 10 hours of TV per week
- **90% exercise, on average, about 1 hour per day**
- **Maintainers expend an avg. of 2000kcal/wk in physical activity**

HOW MUCH PHYSICAL ACTIVITY IS ENOUGH?

- **General health benefit**
 - ❖ Moderate aerobic exercise 150 min/week
(about 30 minutes 5x/week) + strength training
- **Prevention of weight gain**
 - 150-250 minutes per week
 - 150-300 minutes per week*
- **Prevention of weight regain**
 - 200-300 minutes per week
 - 300-420 minutes per week*

SUCCESSFUL MAINTAINERS AND PHYSICAL ACTIVITY



Successful maintenance of weight loss at 4 years required:

2000kcal/wk of PA

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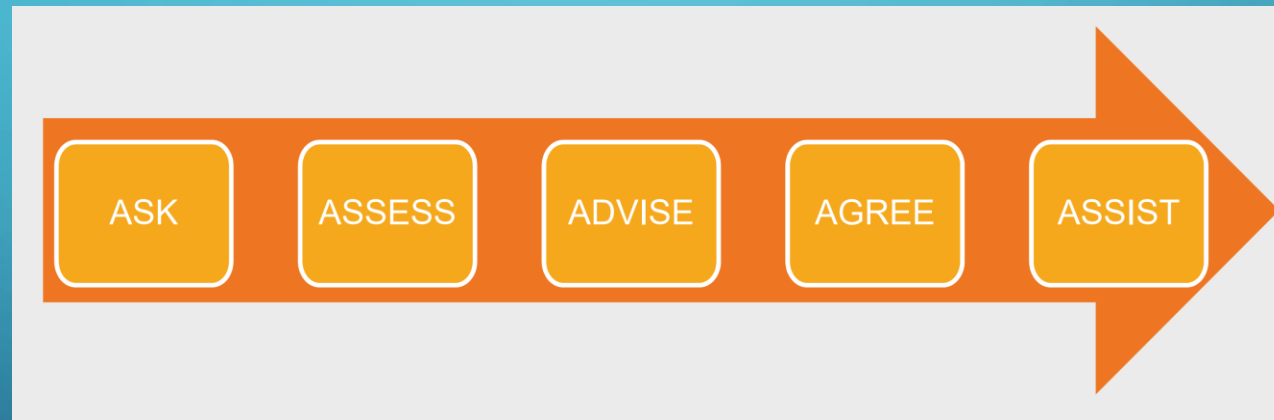
60-70 minutes/day

=

Approx. 420 moderate intensity PA minutes/week

PHYSICAL ACTIVITY & THE 5 A'S

Helping patients find the motivation and confidence to become physically active!



5 A'S AND PHYSICAL ACTIVITY IN ACTION

- Individualized
- Tailored
- Personalized

**Creates a plan that
is SUSTAINABLE!**

Assess Physical activity level Physical abilities Beliefs and knowledge	<u>Individual</u> "How much exercise do you currently get each day?" "What kinds of things make it hard to exercise?"
Advise Health risks Benefits of change Appropriate "dose" of physical activity	<u>Health Policy</u> "The national guidelines recommend at least 150 minutes of moderate activity each week. I strongly recommend that you begin to move around more regularly. We always recommend starting from where you are and building up slowly."
Agree Co-develop personalized action plan Set specific physical activity goals based on interests and confidence level	<u>Social Support</u> "I understand that you have a busy work and family schedule. How do you feel about starting with 20-minute walks for 3 days next week? Maybe you could also use that time to spend with your daughter?"
Assist Identify barriers and create strategies to address them Identify resources for physical activity and social support	<u>Community Resources</u> "Do you have a gym, park, trail system, or other safe place to be active near your home or workplace?"
Arrange Specify plan for follow-up (e.g., visits, phone calls, text messages) Check on progress/ maintenance of physical activity change	<u>Provider/Team</u> "We would like to hear about how the walking is going for you. The nurse will call you in one week to check in and see if you have any questions or concerns."

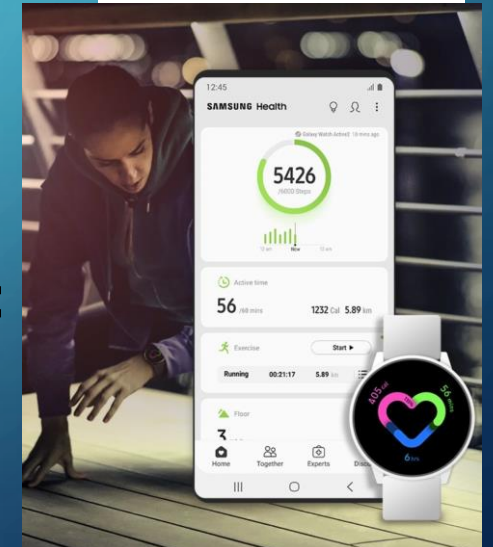
ACCELEROMETERS/PEDOMETERS GET YOU MOVING

Individuals who track their movement:

- Walk 2,491 extra steps per day
- That's 150 extra kcal/day burned walking
- 15 pounds/year possibly lost

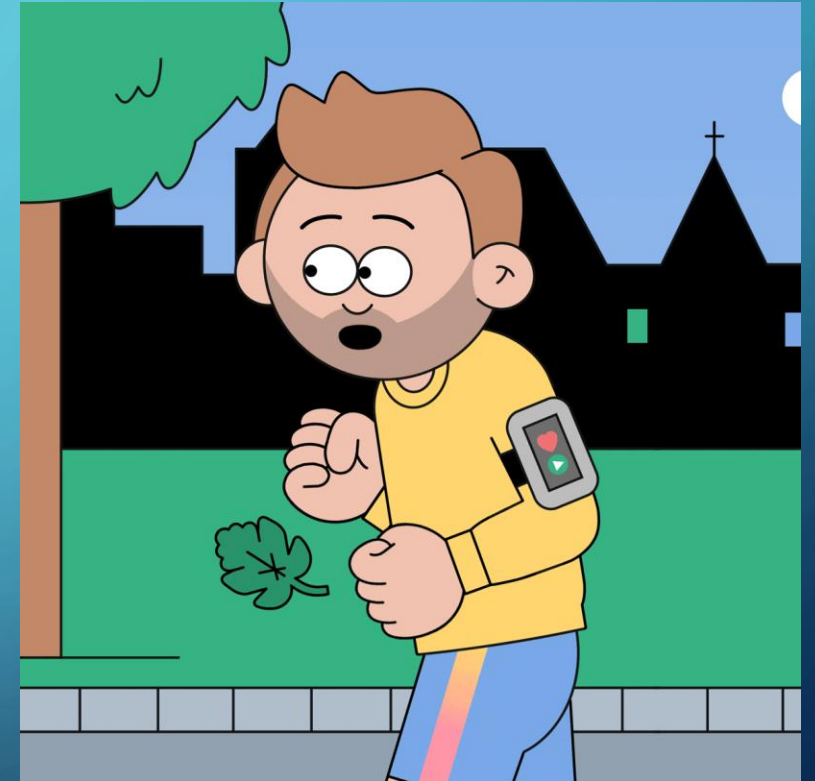
Counseling patients to exercise without a specific intervention is ineffective.

Get them tracking!



PEDOMETER/ACCELEROMETER INTERVENTION

- Advice alone will not kick-start exercise
- Set a step goal and keep a step diary:
 - **Goal 10,000 steps per day**
 - **Average person does 3,000 to 4,000 steps/day**
 - **Every 2,000 steps = 1 mile (100 cal)**
 - **Start by measuring the patient's baseline steps/day**
 - **Increase steps weekly as tolerated**





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