

Key Points – Stay Fit and Well by Walking

1. Exercise prescription:

1.1 The ACSM recommendation (for apparently healthy adults of all ages):

- Moderate-intensity cardiorespiratory exercise for $\geq 30 \text{ min} \cdot \text{day}^{-1}$ on $\geq 5 \text{ d} \cdot \text{week}^{-1}$ for a total of $\geq 150 \text{ min} \cdot \text{wk}^{-1}$, Vigorous-intensity cardiorespiratory exercise for $\geq 20 \text{ min} \cdot \text{day}^{-1}$ on $\geq 3 \text{ d} \cdot \text{week}^{-1}$ for a total of $\geq 75 \text{ min} \cdot \text{wk}^{-1}$ or
- a combination of moderate- and vigorous-intensity exercise to achieve a total energy expenditure of $\geq 500\text{-}1000 \text{ MET} \cdot \text{min} \cdot \text{wk}^{-1}$

1.2 WHO recommendation (for adults aged 18–64 years):

- 150 minutes of moderate-intensity physical activity OR
- 75 minutes of vigorous-intensity physical activity OR
- An equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 MET-minutes.

2. Exercise Intensity

2.1 HR/ HRR / RPE /MET

TABLE 5. Classification of exercise intensity: relative and absolute exercise intensity for cardiorespiratory endurance and resistance exercise.

Intensity	Cardiorespiratory Endurance Exercise										Resistance Exercise	
	Relative Intensity				Intensity (%VO _{2max}) Relative to Maximal Exercise Capacity in METs			Absolute Intensity	Absolute Intensity (MET) by Age			Relative Intensity
	%HRR or %VO _{2R}	%HR _{max}	%VO _{2max}	Perceived Exertion (Rating on 6–20 RPE Scale)	20 METs %VO _{2max}	10 METs %VO _{2max}	5 METs %VO _{2max}	METs	Young (20–39 yr)	Middle-aged (40–64 yr)	Older (≥ 65 yr)	% 1RM
Very light	<30	<57	<37	<Very light (RPE < 9)	<34	<37	<44	<2	<2.4	<2.0	<1.6	<30
Light	30–39	57–63	37–45	Very light–fairly light (RPE 9–11)	34–42	37–45	44–51	2.0–2.9	2.4–4.7	2.0–3.9	1.6–3.1	30–49
Moderate	40–59	64–76	46–63	Fairly light to somewhat hard (RPE 12–13)	43–61	46–63	52–67	3.0 to 5.9	4.8–7.1	4.0–5.9	3.2–4.7	50–69
Vigorous	60–89	77–95	64–90	Somewhat hard to very hard (RPE 14–17)	62–90	64–90	68–91	6.0–8.7	7.2–10.1	6.0–8.4	4.8–6.7	70–84
Near–maximal to maximal	≥ 90	≥ 96	≥ 91	\geq Very hard (RPE ≥ 18)	≥ 91	≥ 91	≥ 92	≥ 8.8	≥ 10.2	≥ 8.5	≥ 6.8	≥ 85

Table adapted from the American College of Sports Medicine (14), Howley (173), Swain and Franklin (344), Swain and Leutholtz (346), Swain et al. (347), and the US Department of Health and Human Services (370). HR_{max}, maximal HR; %HR_{max}, percent of maximal HR; HRR, HR reserve; VO_{2max}, maximal oxygen uptake; %VO_{2max}, percent of maximal oxygen uptake; VO_{2R}, oxygen uptake reserve; RPE, ratings of perceived exertion (48).

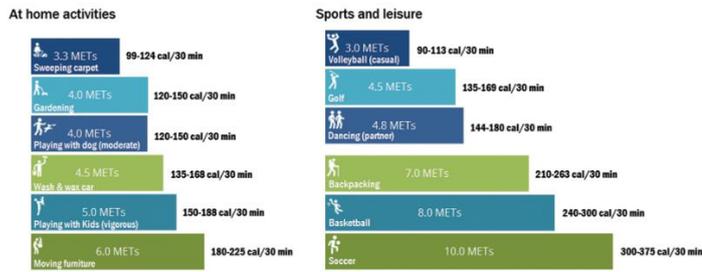
Rating of Perceived Exertion Borg RPE Scale		
6		
7	Very, very light	How you feel when lying in bed or sitting in a chair relaxed.
8		Little or no effort.
9	Very light	
10		
11	Fairly light	
12		Target range: How you should feel with exercise or activity.
13	Somewhat hard	
14		
15	Hard	
16		
17	Very hard	How you felt with the hardest work you have ever done.
18		
19	Very, very hard	
20	Maximum exertion	Don't work this hard!

Borg GA (1982). "Psychophysical bases of perceived exertion". *Med Sci Sports Exerc.* **14**(5): 377–81. doi:10.1249/00005768-198205000-00012. PMID 7154893.

2.2 MET - Metabolic Equivalent of Task

The **metabolic equivalent of task (MET)** is the objective measure of the ratio of the rate at which a person expends energy, relative to the mass of that person, while performing some specific physical activity compared to a reference, set by convention at 3.5 mL of oxygen per kilogram per minute, which is roughly equivalent to the energy expended when sitting quietly.

- 1 MET was considered as the resting metabolic rate (RMR) obtained during quiet sitting.
- 1 MET = oxygen cost of sitting quietly, equivalent to 3.5 ml/kg/min.
- 1 MET = spending 1 kcal/kg/hr



3. Let's Walk

3.1 CityU Hillside Walk on (9/1/2020)



3.10km / 45:39 / 14:45 min/km/ 186m elevation gain/286 Calorie

Average HR 118 b/min Highest HR 158 b/min

Ex. Intensity = $(286/73\text{Kg}) \times (60\text{min}/45:39\text{min}) = 5.2 \text{ MET}$

Ex. Volume = $5.2 \text{ MET} \times 45\text{min} = 234 \text{ MET-minutes}$

3.2 Daily Walking Routine near Home (12/3/2020)



3.8km / 44.02 / 11:35 min/km/ 19m elevation gain/139 Calorie

Average HR 90 b/min Highest HR 102 b/min

Ex. Intensity = $(139/70\text{Kg}) \times (60\text{min}/44.02\text{min}) = 2.7 \text{ MET}$

Ex. Volume = $2.7 \text{ MET} \times 44\text{min} = 118 \text{ MET-minutes}$

3.3 Vigorous Uphill 25/1/2020



9.53km / 2:14:44 / 14:08 min/km/ 595m elevation gain/673 Calorie

Average HR 123 b/min Highest HR 164 b/min

Ex. Intensity = $(673/69.72\text{Kg}) \times (60\text{min}/135\text{min}) = 4.29 \text{ MET}$

Ex. Volume = $4.29 \text{ MET} \times 135\text{min} = 579 \text{ MET-minutes}$

Get started for Fitness Walking

<p>ACSM's Top 10 Fitness Trends for 2020</p>  <p>Wearable technology: Includes fitness trackers, smart health watches, heart rate monitors and GPS tracking devices.</p> <p>http://www.acsm.org/read-research/newsroom/news-releases/news-detail/2019/10/30/wearable-tech-named-top-fitness-trend-for-2020</p>	 <p>Exercise is Medicine®: This global health initiative by ACSM encourages health care providers to include physical activity assessment and associated referrals to certified fitness professionals in the community as part of every patient visit.</p> <p>https://www.cityu.edu.hk/sds/web/EIM.shtml</p>
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4.1 Simple Gears: footwear, clothing, sun protection

4.2 Ask yourself:

- Is this a good time for me to start exercising?
- Am I prepared to start a walking program?
- Where can I walk safely?

4.3 Consideration for developing a walking program:

- How much time do I have available to spend walking each day?
- How far or long should I walk?
- How do I make and keep walking fun?

4.4 Using a Pedometer

4.5 Your First Step – Physical Activity Readiness Questionnaire (PAR-Q)

Starting a Walking Program – ACSM brochure.

https://www.acsm.org/docs/default-source/files-for-resource-library/starting-a-walking-program.pdf?sfvrsn=85e9d2d9_2

5. Green Walking -



Spending at least 120 minutes a week in nature is associated with good health and wellbeing. (2019) Mathew P. White et.al. Scientific Reports 9, Article number 7730(2019)

Extended Reading:

1. Spending at least 120 minutes a week in nature is associated with good health and wellbeing. (2019) Mathew P. White et.al. Scientific Reports 9, Article number 7730(2019)
<https://www.nature.com/articles/s41598-019-44097-3>
2. Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory, Musculoskeletal, and Neuromotor Fitness in Apparently Healthy Adults: Guidance for Prescribing Exercise. ACSM Position Stand. Medicine & Science in Sports & Exercise: [July 2011 - Volume 43 - Issue 7 - p 1334-1359](#) doi: 10.1249/MSS.0b013e318213fefb
https://journals.lww.com/acsm-msse/Fulltext/2011/07000/Quantity_and_Quality_of_Exercise_for_Developing.26.aspx
3. Updating ACSM's Recommendations for Exercise Preparticipation Health Screening (2015) Deborah Riebe et.al. Medicine & Science in Sports & Exercise.
[https://www.acsm.org/docs/default-source/files-for-resource-library/updating_acsm_s_recommendations_for_exercise-28-\(1\).pdf?sfvrsn=3aa47c01_4](https://www.acsm.org/docs/default-source/files-for-resource-library/updating_acsm_s_recommendations_for_exercise-28-(1).pdf?sfvrsn=3aa47c01_4)
4. Starting a Walking Program – ACSM brochure.
https://www.acsm.org/docs/default-source/files-for-resource-library/starting-a-walking-program.pdf?sfvrsn=85e9d2d9_2

Online Evaluation of the Programme:

https://cityuhk.au1.qualtrics.com/jfe/form/SV_0on7Qh0q4cdReBf

