



Guidelines recommend

- 150 minutes of moderate to vigorous activity or 75 minutes of vigorous activity per week, split between 3 days.
- Resistance exercise twice per week.
- Strength and balance training twice per week for older people.
- Reduction in total sedentary time, ideally standing up and light

activity every 30 minutes. Clinicians with access to suitably qualified physical activity trainers can refer for exercise on prescription. However, for the majority of practices this is not possible or realistic and recommending a structured walking programme, such as described here, can be a good alternative (Colberg et al, 2016).

Safety

Slowly increasing the overall volume and intensity of walking activity, as recommended by these guidelines, should not be hazardous in terms of triggering a cardiac event. However, there is a small risk associated with uptake of vigorous intensity exercise in those who were previously inactive. Those with diabetes who are currently inactive but wish to take part in sport or vigorous exercise should consult their doctor and may require further investigation first.

- As walking promotes insulin sensitivity, make those taking insulin or insulin secretagogues aware of the potential for an increase in episodes of hypoglycaemia. Insulin dosages may need to be adjusted as activity levels are increased. Purposeful walking activity should be avoided if blood glucose

levels are <5 mmol/L before starting.

- Walking activity is not suitable for all people with diabetes.
 - All weight-bearing activity should be avoided in those with diabetic foot ulcers, whilst extra care is needed with peripheral neuropathy to detect and prevent foot problems occurring with activity.
 - Those with a recent cardiac or stroke event should initially attend a structured rehabilitation programme before embarking on independent activity programmes.
 - Those with retinopathy should seek guidance from their ophthalmologist before undertaking any exercise programme as some activities may increase the risk of intraocular bleeds.

What and why

- In relation to type 2 diabetes, walking interventions have proven successful in prevention and management through the promotion of increased insulin sensitivity, improved cardiovascular health and improved mood.
- Walking remains the activity of preference for the majority of the population, including those with diabetes. Despite this, physical activity guidelines have been largely generic.
- The following guidelines have taken the latest evidence and generic physical activity guidelines and converted them into recommendations specific to walking activity and steps-per-day tracking. The majority of the population now has access to some form of step-counter technology through pedometer, smartwatch, smartphone or activity tracker ownership, so most individuals will be able to get going straight away.

Citation: Yates T (2019) How to recommend physical activity to people with diabetes safely. *Diabetes & Primary Care* 21: 113–14

Preparation for recommending walking

How many steps per day do you currently take?

Record how many steps you take each day for one week using a pedometer, activity tracker, smartwatch or smartphone*. Add up each day to get a total step count for the week. Divide the weekly total by 7 to get a daily average.

*Most smartphones record steps automatically within their health app

How many steps can you take in 1 minute?

Find a straight*, flat surface (e.g. pavement) and walk at what you would consider to be a brisk pace for 60 seconds. Use a pedometer or other type of step counter to record how many steps you take, or simply count your steps.

*Avoid having to change direction too many times

References and further reading

Colberg SR et al (2016) Physical activity/exercise and diabetes: a position statement of the American Diabetes Association. *Diabetes Care* 39: 2065–79

Henson J et al (2016) Sedentary behaviour as a new behavioural target in the prevention and treatment of type 2 diabetes. *Diabetes Metab Res Rev* 32(Suppl 1): 213–20

Public Health England (2017) *10 minutes brisk walking each day in mid-life for health benefits and towards achieving physical activity recommendations*. Available at: <https://bit.ly/2P7JhIU>

Tudor-Locke C et al (2011) How many steps/day are enough? For older adults and special populations. *Int J Behav Nutr Phys Act* 8: 80

Tudor-Locke C, Bassett DR (2004) How many steps/day are enough? *Sports Med* 34: 1–8

Tudor-Locke C et al (2018) How fast is fast enough? Walking cadence (steps/min) as a practical estimate of intensity in adults: a narrative review. *Br J Sports Med* 52: 776–88

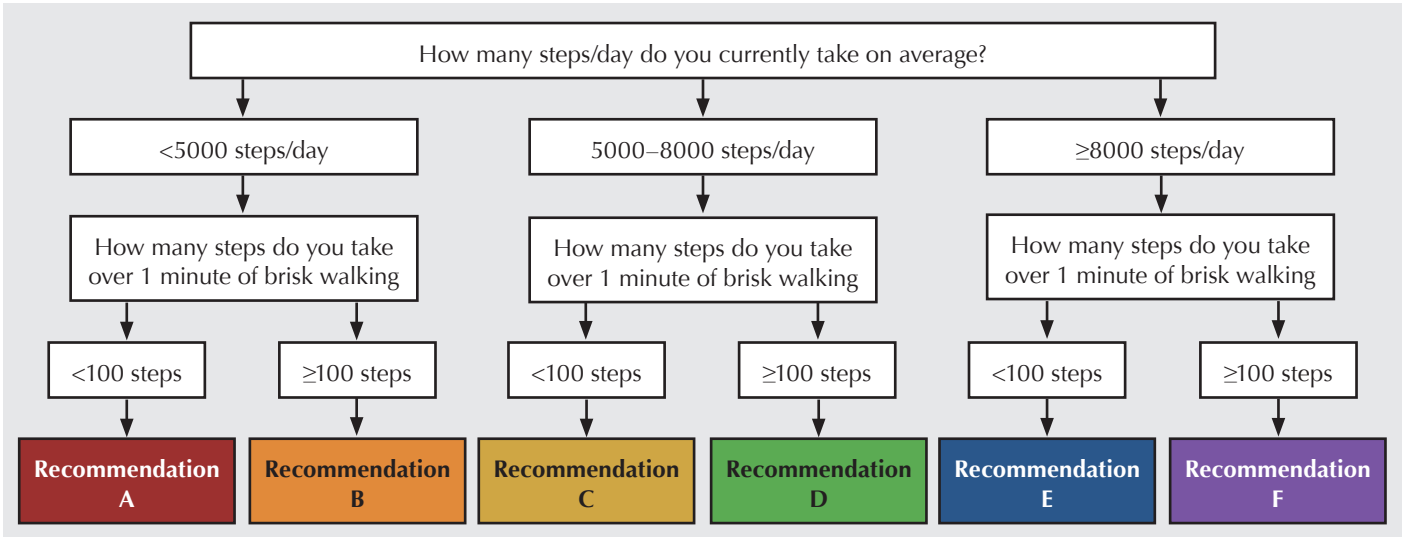
US Dept of Health (2018) *Physical Activity Guidelines for Americans* (2nd edition). Available at: <https://bit.ly/2B3U8zy>

Yates T et al (2009) Effectiveness of a pragmatic education programme aimed at promoting walking activity in individuals with impaired glucose tolerance: a randomized controlled trial. *Diabetes Care* 32: 1404–10

Yates T et al (2014) Association between change in daily ambulatory activity and cardiovascular events in people with impaired glucose tolerance (NAVIGATOR trial): a cohort analysis. *Lancet* 383: 1059–66

Yates T et al (2017) Association of walking pace and handgrip strength with all-cause, cardiovascular, and cancer mortality: a UK Biobank observational study. *Eur Heart J* 38: 3232–40

Recommending a walking programme



Recommendation A

Target dose
Current level + 2000 steps/day. Example: if you are currently achieving an average of 2500 steps/day, aim for 4500 steps/day.
Intensity
Make sure some steps are undertaken at a brisk pace. Work towards achieving at least 1000 of your daily steps over a 15-minute brisk walk on most days of the week.
Patterning
Avoid long periods of uninterrupted sitting. Try and ensure some steps are undertaken during every waking hour.
Future recommendations
If you manage to consistently achieve over 5000 steps/day, revisit the algorithm and revise your goals.

Recommendation B

Target dose
Current level + 2000 steps/day. Example: if you are currently achieving an average of 2500 steps/day, aim for 4500 steps/day.
Intensity
Make sure some steps are undertaken at a brisk pace. Undertake at least 1000 of your daily steps over a 10-minute brisk walk on most days of the week.
Patterning
Avoid long periods of uninterrupted sitting. Try and ensure some steps are undertaken during every waking hour.
Future recommendations
If you manage to consistently achieve over 5000 steps/day, revisit the algorithm and revise your goals.

Recommendation C

Target dose
At least 7500 steps/day.
Intensity
Make sure some steps are undertaken at a brisk pace. Undertake at least 1000 of your daily steps over a 15-minute brisk walk, working up to achieving 2000 steps over one 30-minute brisk walk or two 15-minute brisk walks, on most days of the week. Slowly increase brisk walking intensity until achieving 1000 steps in 10 rather than 15 minutes.
Patterning
Avoid long periods of uninterrupted sitting. Try and ensure some steps are undertaken during every waking hour. Avoid undertaking fewer than 5000 steps on any one day of the week.
Future recommendations
7500 steps/day is roughly equivalent to achieving the physical activity recommendations for health. As a minimum, aim to stay at this level. For a further challenge, revisit the algorithm and revise your goals.

Recommendation D

Target dose
At least 7500 steps/day.
Intensity
Make sure some steps are undertaken at a brisk pace. Undertake at least 1000 of your daily steps over a 10-minute brisk walk, working up to achieving 2000 steps over one 20-minute brisk walk or two 10-minute brisk walks, on most days of the week.
Patterning
Avoid long periods of uninterrupted sitting. Try and ensure some steps are undertaken during every waking hour. Avoid undertaking fewer than 5000 steps on any one day of the week.
Future recommendations
7500 steps/day is roughly equivalent to achieving the physical activity recommendations for health. As a minimum, aim to stay at this level. For a further challenge, revisit the algorithm and revise your goals.

Recommendation E

Target dose
Try at least 10,000 steps/day.
Intensity
Make sure some steps are undertaken at a brisk pace. Undertake at least 2000 steps over one 30-minute walk, or two 15-minute walks, on most days of the week. Try and increase brisk walking intensity until achieving 2000 steps in 20 rather than 30 minutes.
Patterning
Avoid long periods of uninterrupted sitting. Try and ensure some steps are undertaken during every waking hour. Avoid undertaking fewer than 5000 steps on any one day of the week.
Future recommendations
Maintain current activity levels.

Recommendation F

Target dose
Try at least 10,000 steps/day.
Intensity
Make sure some steps are undertaken at a brisk pace. Undertake at least 2000 steps over one 20-minute walk, or two 10-minute walks, on most days of the week.
Patterning
Avoid long periods of uninterrupted sitting. Try and ensure some steps are undertaken during every waking hour. Avoid undertaking fewer than 5000 steps on any one day of the week.
Future recommendations
Maintain current activity levels.