



PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR

A BRIEF TO SUPPORT people living with type 2 diabetes



INTRODUCTION

Physical activity plays an important role in the care of people living type 2 diabetes. Regular physical activity can help reduce some of the harmful effects and slow or even reverse disease progression. Being active can also reduce symptoms of depression and anxiety, and enhance thinking, learning, and overall well-being. Conversely, too much sedentary behaviour can be unhealthy.

Everyone can benefit from increasing physical activity and reducing sedentary behaviour. However, many people face barriers or may be concerned about becoming more active. Additional guidance and support can help people living with type 2 diabetes be more active for their health and well-being.

What this brief will provide

This brief summarises the recommendations on physical activity and sedentary behaviour for people living with type 2 diabetes. It will support and guide health care professionals and allied workers to promote physical activity among people living with type 2 diabetes as part of the management of their condition, and to improve their physical and mental health and well-being. It is based on the WHO Guidelines on physical activity and sedentary behaviour (1), and supported by additional resources as part of the ACTIVE technical package (2).



PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR RECOMMENDATIONS FOR

people living with type 2 diabetes

It is recommended that:

- › All adults and older adults with type 2 diabetes should undertake regular physical activity.

Strong recommendation, moderate certainty evidence

At least **150 to 300 minutes** moderate-intensity aerobic physical activity

or

at least **75 to 150 minutes** vigorous-intensity aerobic physical activity

or an equivalent combination throughout the week

- › Adults and older adults with type 2 diabetes should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for substantial health benefits.

Strong recommendation, moderate certainty evidence

- › Adults and older adults with type 2 diabetes should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional benefits.

Strong recommendation, moderate certainty evidence

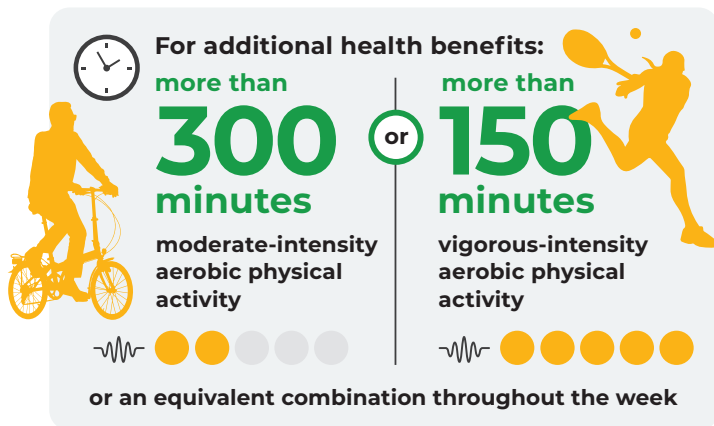
For additional health benefits:

On at least **2 days a week** muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups.

On at least **3 days a week** varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity.

- › As part of their weekly physical activity, older adults with type 2 diabetes should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity on 3 or more days a week, to enhance functional capacity and prevent falls.

Strong recommendation, moderate certainty evidence



› When not contraindicated, adults and older adults with type 2 diabetes may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.

Conditional recommendation, moderate certainty evidence

GOOD PRACTICE STATEMENTS

- When not able to meet the above recommendations, adults with type 2 diabetes should aim to engage in physical activity according to their abilities.
- Adults with type 2 diabetes should start by doing small amounts of physical activity and gradually increase the frequency, intensity and duration over time.
- Adults with type 2 diabetes may wish to consult with a physical activity specialist or health care professional

for advice on the types and amounts of activity appropriate for their individual needs, abilities, functional limitations/complications, medications, and overall treatment plan.

- Pre-exercise medical clearance is generally unnecessary for individuals without contraindications prior to beginning light- or moderate-intensity physical activity not exceeding the demands of brisk walking or everyday living.



In adults, including those with type 2 diabetes, higher amounts of sedentary behaviour are associated with the following poor health outcomes: all-cause mortality, cardiovascular disease mortality and cancer mortality, and incidence of cardiovascular disease, cancer and incidence of type 2 diabetes.

For adults living with type 2 diabetes, it is recommended that:

› **Adults and older adults with type 2 diabetes should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.**

Strong recommendation, low certainty evidence

› **To help reduce the detrimental effects of high levels of sedentary behaviour on health, adults and older adults with type 2 diabetes should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.**

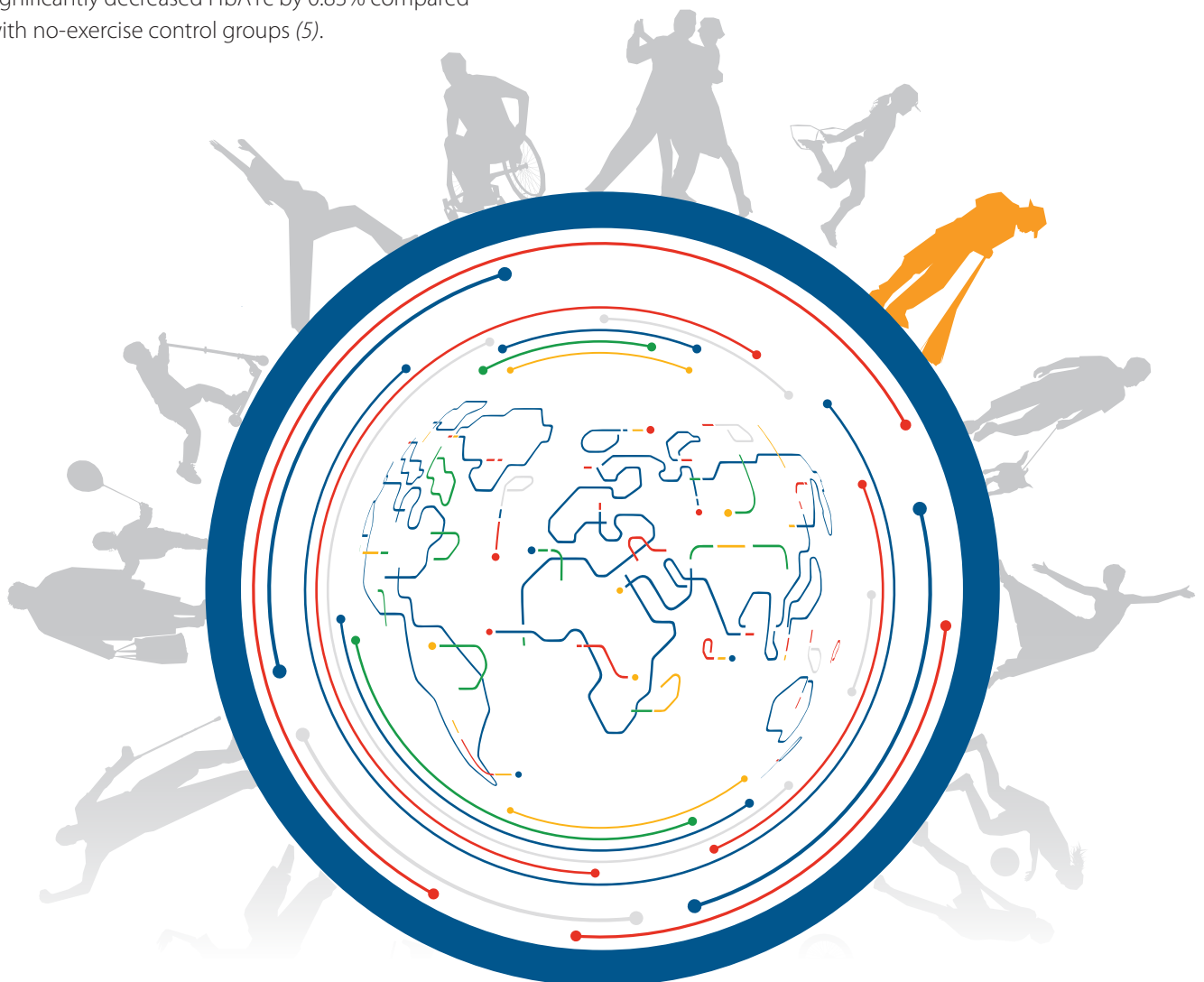
Strong recommendation, low certainty evidence



Physical activity can confer many health benefits for adults and older adults, including reduced risk of all-cause mortality and cardiovascular disease mortality, prevention of hypertension, site-specific cancers¹ and type 2 diabetes, and improved mental health (reduced symptoms of anxiety and depression), cognitive health and sleep. In older adults, physical activity helps prevent falls and falls-related injuries and declines in bone health and functional ability.

In addition, for those living with **type 2 diabetes**, physical activity, including aerobic activity, muscle-strengthening activity or a combination of both, is associated with improved secondary indicators of risk of disease progression (HbA1c, blood pressure, BMI, and lipids) (3, 4). Resistance training was associated with greater reduction in HbA1c versus control groups and for high-intensity resistance training on fasting insulin (4). Interval training (2–5 times/week; intervals 1–4 mins duration; total session lengths 20–60 mins) was associated with statistically significantly decreased HbA1c by 0.83% compared with no-exercise control groups (5).

Higher amounts of physical activity (from both below and at, or above the recommended levels of 150 mins/week of moderate-intensity activity) progressively reduce risk of cardiovascular mortality in adults with type 2 diabetes (6–8). For example, compared with doing no activity, engaging in some activity was associated with a 32% reduction in risk of cardiovascular disease mortality, while engaging in amounts of activity meeting physical activity guidelines or above was associated with a larger 40% reduction in risk of cardiovascular disease mortality (8). Most interventions are based around 150–300 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity activity, and/or 2–3 sessions of resistance training per week. For some outcomes (e.g. HbA1c and blood pressure) in adults with type 2 diabetes, there is evidence for a stronger effect with more aerobic activity (i.e. greater than 150 mins/week versus less than 150 mins/week), but limited evidence for intensity (3).



SUPPORTING PEOPLE LIVING WITH TYPE 2 DIABETES TO BE MORE ACTIVE

Health care providers have a central role and responsibility in supporting people living with type 2 diabetes and are ideally positioned to promote comprehensive lifestyle interventions for the prevention and management of chronic diseases. Some adults with **type 2 diabetes** may wish to consult with a physical activity specialist for advice on the types and amounts of activity appropriate for their individual needs, abilities, functional limitations/ complications, medications, and overall treatment plan. Pre-exercise medical clearance is generally unnecessary for individuals without contraindications prior to beginning light- or moderate-intensity physical activity not exceeding the demands of brisk walking or everyday living.

Integrating counselling on physical activity into health care as part of routine practice is a cost-effective intervention for tackling NCDs (9). Brief interventions for physical activity assessment and counselling delivered in primary health care can increase physical activity in healthy, inactive adults at a reasonable cost: varying from INT\$66 to INT\$683 to convert one inactive adult to being “active” (10).² A brief intervention by a health care professional to provide physical activity assessment and counselling can generate a cost-effectiveness ratio of INT\$ 1000–5000 per disability-adjusted life year (DALY) averted in low- and lower-income countries, and INT\$ 500–1000 per DALY averted in upper-middle and high-income countries (8).

The WHO toolkit on promoting physical activity through primary health care (11) supports the use of the Physical Activity Brief Intervention Protocol, which is based on the “5As” model for supporting behaviour change, and provides an easy means by which health care providers can communicate with patients about healthy behaviours. The toolkit also emphasises that physical activity is not just exercise or fitness, but that all physical activity counts. Although the greatest benefits are achieved from meeting the recommendations, just being a bit more active will start to improve health. Patients can start by doing small amounts of physical activity and gradually increase the frequency, intensity and particularly the duration over time.

Lots of different activities count – walking, cycling, wheeling; doing chores around the home and garden, or at work; sport, exercise and play. There are many ways to be active that don't require special equipment, expensive membership or special facilities. Physical activity can be incorporated into everyday activities and routines, such as by taking the stairs rather than the elevator, walking to the shops rather than driving, or dancing to your favourite music. Encouraging patients to be active with family, friends, peers or a group can be more fun and engaging and can help to stay motivated.

Walking is a good way for those who are not active to start and gradually build up their physical activity. mActive is a mobile phone-based 4-week walking programme designed to improve health and enhance quality of life, through messages to prompt a regular walking routine, with step-by-step goals. mActive provides support and motivation for adults of all abilities, and can be adapted for all countries and communities (12).

Communication campaigns can also help to promote the protective benefits of physical activity for mental and physical health and well-being. These can also support not only the broad strategy of improving the levels of population health literacy, but can also target specific groups, such as those living with certain conditions and empower them to take action to improve their health by changing personal lifestyles (13). Communications campaigns can be more effective if they link to community-based opportunities to be active that can support behaviour change.

There should be strong links between health care, communications campaigns and physical activity opportunities in the community. Referral by health care providers, or awareness-raising need to be supported by accessible opportunities indoor or outdoor community programmes for the delivery of individual or group-based exercise programmes, or places and spaces where people can be physically active. Community-based programmes can include organized walking groups, fitness, yoga and dance classes, as well as more structured forms of physical activity such as community sports clubs. Walking can also be supported by ensuring the local environment provides safe and enjoyable opportunities to walk, such as well-maintained sidewalks, parks and open spaces.

² Costs depend on type of intervention: varying from a brief exercise advice to an “active script programme”. Costs were converted from British pounds to INT\$ at an exchange rate of INT\$ = 0.692551 British pounds, in 2015 (year of the study publication). Exchange rate as reported by the OECD (see: https://stats.oecd.org/viewhtml.aspx?datasetcode=SNA_TABLE4&lang=en).

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