



THE RIGHT DOSE OF EXERCISE

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Type 2 diabetes is sometimes considered a complication of metabolic symptoms characterised as having predominant insulin resistance together with relative insulin inadequacy resulting in hyperglycaemia.

Apart from non-modifiable factors such as genetic influence and ageing, modifiable risk factors such as central obesity, hypertension, dyslipidaemia, and physical inactivity are commonly associated with type 2 diabetes and closely linked to the development of coronary heart disease.

Currently, there is no cure for diabetes and the disease must be managed with lifestyle interventions through personalised exercise programmes and medical nutrition therapy. An effective exercise programme is vital as it not only lowers the blood glucose level, but also acts as a treatment by improving insulin resistance and other modifiable risk factors. In cases where medication is needed, an exercise and nutritional programme should be added to these lifestyle improvements, not replace the medicine.

A common objective of exercise for diabetes is to reduce blood glucose levels. In fact, exercise training does not always lower the blood glucose level as some high intensity exercises such as resistance training can elevate blood glucose level instead.

Research has shown that an acute bout of high intensity workout raises the blood glucose level but it gets lowered fairly quickly and stays low for the next 12 to 24 hours providing additional benefits not seen in typical moderate intensity cardio exercises.

However, it should not be confused with individuals with poorly controlled blood glucose and low level of fitness as they might also experience blood glucose rebound (increase in blood glucose level) after a moderate intensity exercise session. Exercise intensity and duration for this group of individuals should be reduced and closely monitored. Moreover, high intensity exercise is not suitable for all, especially those with complications and chronic heart disease. Always consult your doctor before starting any new exercise regime.

An effective exercise programme has to consider the intensity, duration, individual fitness and current body conditions (e.g. blood sugar level) to reduce the risks of hypoglycaemia and maximise exercise outcome. The programme sessions should start at a lower intensity in the first few weeks and progress in intensity as one gains strength. For example:

- Start with a goal of exercising 30 minutes a day in moderate intensity for six to seven days a week or target a weekly energy expenditure of about 1000 kcals.

- Progress slowly from 30 minutes of exercise to 45 and then 60 minutes of daily exercise targeting about 300 minutes or 2000 calories of exercise per week followed by adding two to three sessions of resistance training per week to the exercise regime. Very brisk walk, swimming and cycling are all cardio exercises that are easy to perform.

In this issue, we introduce some basic resistance exercises that target big muscle groups and can be easily added to your exercise regime for additional benefits. All you need is a pair of dumbbells of the right weight.

Intensity should be monitored during each session, a rating of perceived exertion (RPE) of 12 to 16 on a six to 20 scale is recommended. Do not use sweating as an indicator of a good workout as high humidity reduces the evaporative loss of sweat, which can reduce body's ability to control core temperature leading to heat illness.

There are many benefits of exercise for both physically and psychologically. But it requires long term commitment and consistency to see the full effects. If you are previously sedentary or has been exercising irregularly, my call is to pre-plan your weekly workout, start easy and slowly with any physical activities you like to do, be it learning a new sport or just evening walks with the dog. Give yourself a few months to get into an autonomous mode before going into a more intense and structured training. The ultimate goal is to build exercise into your daily life.

As a precaution:

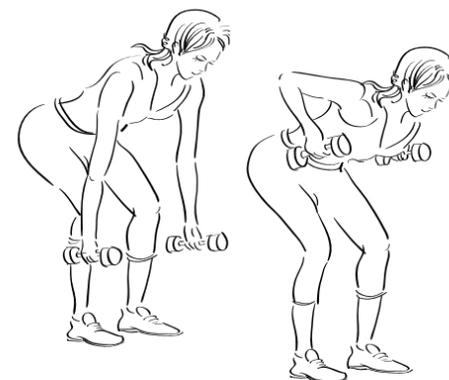
- always do an SMBG check to make sure you are safe to exercise before every exercise session.
- always monitor your blood glucose level during and after every exercise session to prevent going into post-exercise hypoglycemia.
- avoid exercising late at night unless recommended by a doctor or exercise specialist.

Resistance Exercise workout

Total time: 45 minutes
 Sessions: 2 times per week on non-consecutive days
 Resistance: 2 dumbbells of equal weight which you can manage 15-20 repetitions.
 Rest duration: 30 to 60 seconds between sets and exercise.
 Warm-up: 10 minutes of brisk walking on treadmill or stationary walking followed by stretching.
 Warm-down: Slow walking for 5 minutes, followed by stretching.



Repetitions 12-15
Muscle Group Shoulders
Sets 1-2
Exercise Standing shoulder press
Description Stand with legs shoulder width apart and toes pointing forward.
 Hold dumbbell by the side of your shoulder in neutral grip.
 Breathe in and extend your arms upwards at the same time while breathing out. Hold position for 1 second, before returning to start position slowly, while breathing in. Hold for 1 second and repeat.



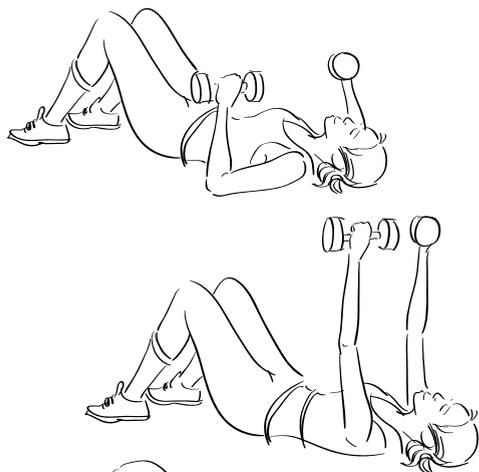
Repetitions 12-15
Muscle Group Back
Sets 1-2
Exercise Bent-over row
Description Stand with legs shoulder width apart and toes pointing forward. Bend forward with knees slightly bend and keep your back straight throughout the exercise.
 Hold dumbbell by the side perpendicular to the floor in neutral grip.
 Breathe out and pull dumbbell towards your chest while breathing in. Hold position for 1 second, before returning to start position slowly, while breathing out.



Repetitions 12-15
Muscle Group Chest
Sets 1-2
Exercise Floor press
Description In supine position, both knees flexed at about 90 degrees and feet on the floor. Keep your back flat, touching the floor throughout the exercise.
 Hold dumbbell in overgrip and abduct elbow at around 80 to 90 degrees and forearm perpendicular to the floor.
 Breathe in, push dumbbell towards the ceiling maintaining arms perpendicular to the floor, while breathing out. Hold position for 1 second, before returning to start position slowly, while breathing in.

Illustrations by Tilen Ti

Tip: If unable to maintain synchronised movement between left and right arms, start with single arm first.

**Repetitions**

12-15

Muscle Group

Abdominals

Sets

1-2

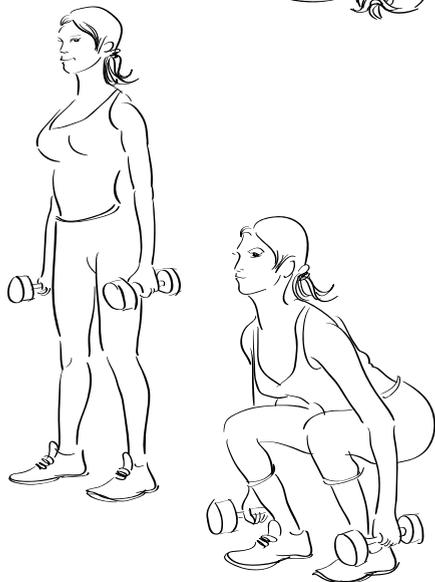
Exercise

Reverse crunch with dumbbell

Description

Lie supine with knees flexed at 90 degrees and feet on the floor. Hold dumbbell with elbows fully extended and arms perpendicular to the floor in neutral grip.

Maintaining knee angle, breathe out and lift both knees towards the chest, while breathing in. Hold position for 1 second, before returning to start position, while breathing in.

**Repetitions**

12-15

Muscle Group

Upper legs

Sets

1-2

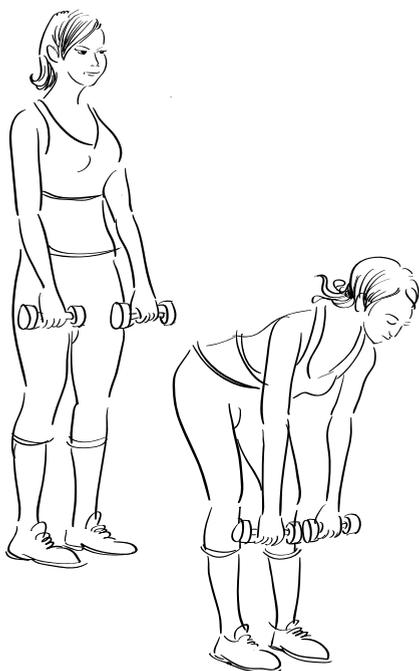
Exercise

Squat

Description

Stand with legs shoulder width apart and toes pointing forward.

Hold dumbbell by the side in neutral grip. Breathe out, lower your body till your thigh is parallel to the floor. Your knees should be moving forward in line with your second toe while breathing in. Hold position for 1 second, before returning to start position slowly, while breathing out. Hold for 1 second and repeat.

**Repetitions**

12-15

Muscle Group

Lower back

Sets

1-2

Exercise

Good morning with dumbbell

Description

Standing with legs shoulder width apart and toes pointing forward. Hold dumbbell in front of thigh in over grip.

Breathe in, maintaining elbows extended, knees extended, upright shoulder and your back flat, lower your shoulder towards the floor while breathing out till upper torso is parallel to the floor. Hold position for 1 second, before returning to start position, while breathing in.

Tips : If your upper back starts to crouch when lowering your upper body, reduce the weight of the dumbbell.