

IS YOUR EXERCISE REALLY WORKING OUT?

by Ray Loh, exercise physiologist,
Sports Medicine and Surgery Clinic, Tan Tock Seng Hospital

What you do during an exercise session has a huge effect on the blood glucose (BG) level during and after exercise.

Many individuals with diabetes are sometimes puzzled and alarmed by the rise in blood glucose after exercise.

Post-exercise BG depends greatly on the intensity, duration, pre-exercise control and the individual's training status.

Our skeletal muscles are the main consumers of glucose and they store some glucose (glycogen) for our daily physical activities. When glycogen in the muscle is used up, it gets replenished through two distinct pathways.

At rest, our muscle replenishes its glycogen storage via glucose uptake from the BG with the help of insulin. When muscle contractions are strong enough during exercising, glucose uptake from BG increases via GLUT proteins (another form of glucose transporter) without the need for insulin.

Both uptakes reduce our body's BG level. Our body then maintains the BG level by glucose production through the liver and mobilisation of other fuels such as free fatty acids and amino acids.

For people with diabetes, during a moderate exercise session such as a slow or brisk walk, BG utilisation by muscle usually raises more than hepatic glucose production and, hence, BG reduces. This, however, also increases the risk of hypoglycaemia when exercise is prolonged.

During high intensity exercise, plasma catecholamine (exercise stress hormones) increases, thus leading to a rapid increase in hepatic glucose production. This increases BG which lasts for about one to

two hours even after exercise has ended. This effect is commonly seen during intense and short bouts of exercises such as resistance training or more intense functional exercise training. It has been shown that BG will reduce quickly after these training sessions and the lowered BG is sustained for the next 24 hours.

To reap the full benefits of exercise, it is important to understand what to do and how much to do. Adjust your exercise program according to your health and fitness condition.

Add variety to your exercise regime. Include aerobic and anaerobic exercises. Have a good blend of easy, longer duration walks, medium duration brisk walks or low impact functional exercises and short bouts of higher intensity exercises such as heavy weight lifting (about 70% maximum strength).

A low impact 30-minute functional exercise session which emphasises correct movements and muscular contractions can be as effective in reducing BG levels as one to two hours of easy walking.

A vigorous resistance-training session might lead to hyperglycaemia lasting one to two hours in the beginning but could see lower BG levels for the next one to two days when food intake is maintained. Most important of all, exercise safely, be consistent and enjoy your workout.



V-Crunch



2



1. Lying supine with hand by your side. This is the start position.
2. Lift the knee and chest off the floor at the same time till your legs and arms are parallel to the floor.
3. Hold position for 1 second and return to start position.

Work your way up to 20 repetitions.

Push-up shoulder row



2



1. Get into standard push-up position.
2. Maintaining a braced core with hips extended. Flex and bring elbow away from the floor till your elbow is behind your back.
3. Hold position for a second before returning hand to the floor. Repeat with the other arm to complete 1 repetition.

Work your way up to 20 repetitions.

Diagonal toe touch



2



1. Stand upright with arms extended and parallel to the floor.
2. Brace your core, maintaining your knees fully extended, flex your hip, rotate your shoulder and touch your left feet with your right hand.
3. Return to start position and repeat with the other hand to complete 1 repetition.

Work your way up to 20 repetitions.

Push-up rotation



2



1. Get into the standard push-up position.
2. Brace your core, maintaining elbow fully extended, raise one hand till it is perpendicular to the floor and rotate your body to the same side at the same time slowly.
3. Hold position for a second before returning to start position. Repeat with the other hand to complete 1 repetition.

Work your way up to 20 repetitions.

Illustrations by Tilen Ti

The following exercises are designed for general healthy individuals. Fundamental mobility, flexibility and stability are needed to perform these exercises properly. If you feel pain or discomfort in any position or when performing any of the exercises, do not continue doing it. Check with your health care provider to see if you have any limitations at the moment in performing those exercises.

For beginners, start with fewer repetitions and progress with an increment of 3 to 5 repetitions weekly till you are able to perform 20 repetitions at one go.