

Exercising with diabetic microvascular complications

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D iabetic microvascular complications involve small vessels, such as capillaries. These include retinopathy and neuropathy. Care should be taken while exercising if you have any of these conditions. Here are some exercises to avoid and exercises you can do:

Diabetic Retinopathy

Diabetic retinopathy (DR) is a microvascular complication that can affect the peripheral retina, the macula, or both and is a leading cause of visual disability and blindness in people with diabetes¹.

For patients with active proliferative retinopathy, strenuous exercise may

speed up vitreous haemorrhage or traction retinal detachment.

These individuals should avoid anaerobic exercise and physical activity that involves straining, jarring or valsava-like manoeuvres (coughing, sneezing, laughing, straining at stools, etc) or exercises that dramatically elevate blood pressure.

Exercises such as walking, swimming, stationary cycling and low impact aerobics are more suitable.

Diabetic Nephropathy

Serious and progressive complications of diabetes may lead to end stage renal failure.

No specific physical activity is recommended but you should avoid activities which cause the systolic blood pressure to rise to 180 to 200 unless blood pressure is carefully monitored during exercise.

Diabetic Neuropathy: Peripheral

Loss of lower-extremity sensation coupled with impaired peripheral vascular function can contribute to lower-extremity (commonly foot) ulceration².

Care must be taken as pins and needles may result in loss of protective sensation in the feet.

Significant pins and needles is a warning sign to limit weight-bearing exercises.

Repetitive exercise on insensitive feet can lead to ulceration and fractures. Furthermore, peripheral neuropathy can increase risk of loss of balance and, thus, falls.

Avoid prolonged walking, stepping exercises and jogging. Intermittent exercises, swimming and stationary cycling as well as resistance exercises in seated position are safe. Do not swim if you have foot ulcers.

Proper footwear is essential and must be emphasised for individuals with pins and needles. The use of silica gel or air midsoles as well as polyester or blend (cotton-polyester) socks are useful to prevent blisters.

Keep the feet dry to minimise trauma to the feet. Individuals must monitor closely for blisters and other potential damage to their feet, both before and after physical activity or exercise.

Diabetic Neuropathy: Autonomic

People with diabetes also frequently have autonomic neuropathy, including cardiovascular autonomic dysfunction, which is manifested as abnormal heart rate and vascular control.

Diabetes-related cardiac autonomic neuropathy is frequently underdiagnosed and can include clinical abnormalities such as resting tachycardia, exercise intolerance, resting heart rate variability, slow heart rate recovery after exercise, "silent" myocardial infarction, and increased risk of mortality³ These individuals may be insensitive to low blood glucose levels, thus regular glucose checks are important.

Presence of autonomic neuropathy may limit an individual's physical activity capacity and increase the risk of adverse cardiovascular events. It is therefore important to measure blood glucose level before and after exercise as well as monitor heart rate during exercises.

Significant pins and needles is a warning sign to limit weight-bearing exercises. Repetitive exercise on insensitive feet can lead to ulceration and fractures.

BEFORE AND AFTER CHECKLIST

- 1 Check blood glucose levels before and after an exercise routine.
- 2 Check blood pressure before and after exercise.
- 3 If you suffer from numbness or pins and needles in the feet, monitor them for broken skin or blisters.
- 4 Monitor your heart rate during exercise.

Consult a doctor if one has not undertaken any formal exercise. Consult a physiotherapist to conduct a graded exercise test before prescribing specific exercises, especially so if you have other medical conditions or complications.

References

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