

## HOW TO INDIVIDUALIZE AEROBIC TRAINING IN STROKE PATIENTS?

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### Background and Aims

Stroke is one of the leading causes of disability and mortality worldwide. Patients after stroke often have reduced cardiorespiratory fitness and physical activity levels, which is associated with an increased risk of cardiovascular diseases. Cardiopulmonary exercise testing (CPET) can be used to determine cardiovascular disease risk and indicate aerobic exercise in stroke patients. The aim of this study was to demonstrate the role of CPET in the stroke rehabilitation.

### Methods

Review of recent studies on CPET after stroke.

### Results

Early aerobic training has a positive effect on aerobic capacity, walking speed and endurance in the stroke recovery. CPET should be performed as soon after stroke as patients are medically stable. Prior to CPET, patients shouldn't have contraindications such as unstable angina or uncontrolled hypertension. Blood pressure, heart rate, ECG, oxygen saturation and clinical symptoms are closely monitored during the test. The exercise mode (cycle ergometer or treadmill) is determined based on the patient's motor deficits. Cycle ergometry is safer for patients with balance or gait disorders. CPET evaluates parameters such as peak oxygen consumption ( $\text{VO}_{2\text{peak}}$ ), ventilatory threshold and respiratory exchange ratio, which help to determine aerobic capacity and training zones. The  $\text{VO}_{2\text{peak}}$  is a predictor of functional independence and long-term survival in stroke patients. CPET is terminated when the patient becomes symptomatic or when maximal effort is reached. Aerobic exercise in subacute and chronic stroke patients should be performed three to five days per week for at least eight weeks. The intensity must be moderate (training zone assessed by CPET). Patients should start with 20 minutes per exercise and gradually increase duration.

### Conclusion

Aerobic exercise improves cardiorespiratory fitness and physical activity levels in stroke patients and helps reduce the risk of a second stroke. CPET is critical for assessing aerobic fitness and exercise intensity and for monitoring long-term recovery in stroke patients.

**Keywords:** CPET, stroke, aerobic capacity