

CPET – Patient guide

About CPET

Cardiopulmonary Exercise Test (CPET, cardiopulmonary stress test, ergospirometry) is an examination used worldwide in cardiology, pulmonology, sport medicine and rehabilitation. It is a great tool to assess effects of treatment and training.

Examination is based on expired gas analysis (oxygen and carbon dioxide) during exercise. It is one of the most advanced methods for indicating metabolic thresholds and zones.

What do we measure?

Maximal oxygen uptake (VO_{2max})

Peak oxygen uptake (VO_{2peak})

Respiratory Exchange Ratio (RER, VCO_2/VO_2)

Ventilatory response (VE/VCO_2 , VE/VO_2)

Anaerobic Threshold (AT) and Respiratory Compensation Point (RCP)

Maximal heart rate for fat burn (HRFatmax)

Work (if using cycloergometer or arm ergometer)

Preparation

Patient should be healthy and rested. We strongly advice not to participate in training sessions for two days before the examination. In case of fatigue prior to the examination, collected data could be not reliable.

We recommend having a light meal approximately 3 hours before CPET. Do not start the test fasting! Cigarettes, coffee or strong tea in the day of examination are prohibited.

We suggest taking former CPET results and additional examinations data if there is such a possibility or doctor's indication.

Towel, sport outfit and shoes will be needed. Cyclists are asked to bring their cycling shoes with their own clipless pedals (if they use different system than SPD) and to write down their bikes' geometry settings in order to properly set up the cycloergometer.

Performing the CPET

To assure the proper conduct of CPET there is always qualified staff present during the examination (including M.D.).

Patient is asked to undress (upper body) prior to the examination in order to prepare his skin properly for ECG attachment.

CPET is conducted with the use of a treadmill, cycloergometer or arm ergometer. After ECG electrodes are attached, the patient is required to wear a special mask necessary for the test. The mask is connected to the machine responsible for gas analysis. The workload is being increased gradually until expected parameters are reached or any indication for halting the test occurs. Examination can also be stopped at any time due to patient's request. CPET lasts from 30 to 60 minutes.

Information You should report to M.D. or technician conducting the test

Close cooperation between patient, technician and M.D. is highly advised to collect reliable and usable data. During the examination patient should report immediately about any sign of pain, dyspnea, dizziness, tinnitus, etc.. However, it should be remembered that fatigue is normal, physiological reaction to exercise, and unjustified request for halting the test may bring difficulties in data interpretation.

Possible threats

CPET belongs nowadays to the group of safe examinations, however myocardial infarction, cardiac arrest or even death rarely occurs (1/2500 examinations). Chest pain, arrhythmias, dizziness, blood pressure fall, legs pain are most often observed side effects. Contact allergy on the skin parts where ECG electrodes were attached or mask placed may appear in very sensitive person. Fatigue after examination may remain up to few hours.

Absolute contraindications:

- acute myocardial infarction (first 48 hours)
- unstable angina of high risk
- uncontrolled cardiac arrhythmia, which may have significant hemodynamic responses (e.g. VT)
- severe symptomatic aortic stenosis, aortic dissection, pulmonary embolism or pericarditis
- multivessel coronary artery diseases that have a high risk of producing an acute myocardial infarction
- unbalanced and symptomatic heart failure
- other acute disease, which may have impact on performing the CPET or may deteriorate during exercise (acute inflammation, kidneys' failure, hyperthyrosis)
- physical disability, which may lead to unsafe situations for the patient and improper CPET analysis.
- patient disagreement

Relative contraindications:

- narrowing of the left main coronary artery
- electrolyte disturbances
- tachyarrhythmias and bradyarrhythmias
- atrial fibrillation with uncontrolled ventricles activity
- hypertrophic cardiomyopathy
- mental retardation making cooperation impossible
- advanced AV block



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Reservations

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