

# **Abstract**

## **Title:**

Comparison of universal and specific functional stress tests of ski-mountaineers.

## **Objectives:**

The aim of the thesis is to compare maximal functional parameters of ski-mountaineers measured during three functional laboratory stress tests. The functional stress tests were set on a treadmill, bicycle ergometer, and on a ski-mountaineer trainer. Consecutively, there is evaluated the meaning of testing of the functional parameters on the ski-mountaineer trainer.

## **Methods:**

Interindividual and intraindividual descriptive study of 10 ski-mountaineers of middle and high level performance.

## **Results:**

The respondents reached the average value of  $VO_{2max}$   $63,3 \text{ ml.kg}^{-1}.\text{min}^{-1}$  on the ski-mountaineer trainer,  $67,5 \text{ ml.kg}^{-1}.\text{min}^{-1}$  on a treadmill and  $66,5 \text{ ml.kg}^{-1}.\text{min}^{-1}$  on a bicycle ergometer. The average measured HR on the ski-mountaineer trainer was 179 heartbeats/min, on the treadmill 185 heartbeats/min and on the bicycle ergometer 183 heartbeats/min. The average value of R reached the value of 1,09 on the ski-mountaineer trainer, 1,18 on the treadmill and 1,19 on the bicycle ergometer. The highest measured value of  $VO_{2max}$  reached on the treadmill was  $79,3 \text{ ml.kg}^{-1}.\text{min}^{-1}$ , the bicycle ergometer enabled to reach maximum  $76,5 \text{ ml.kg}^{-1}.\text{min}^{-1}$  and the highest value reached on the ski-mountaineer trainer was  $76,5 \text{ ml.kg}^{-1}.\text{min}^{-1}$ .

## **Keywords:**

Functional stress diagnostics, ski-mountaineering, maximal oxygen consumption ( $VO_{2max}$ ), heart rate, respiratory quotient (R, RER).