

## **ABSTRACT**

**Title:** Comparison of lactate level at the same load in a swimming treadmill and on a bicycle ergometer

**Subject:** 6 students (3 girls and 3 boys) from the first year of Bachelor's study at the Faculty of Physical Education and Sport of the Charles University at the age of 20,5 years  $\pm$  3 years took part in this research.

**Goal of the research:** To compare demands of the load in the swimming flume with the same load on the bicycle ergometer, mainly at the level of the anaerobic threshold.

**Methods:** We tested students by the method Critical Swimming Speed (CSS) for finding out their anaerobic threshold. Then students swam physical tests in the swimming treadmill - flume. The test consists of three 6 min parts. The first part of the swimming test was under the level of the CSS, the second part was at the level of the CSS and the third part was above the level of the CSS. We used the device for measuring the beat frequency (sport-testers) for obtaining information about changes of the heart rate (HR) during tests. Afterwards we accomplished tests on the bicycle ergometer, where we maintained HR at the same levels as in the load in the flume. We measured level of blood lactate (LA) after every 6 min part in the flume and on the ergometer. We statistically processed resulted values of LA by the Wilcoxon signed rank test.

**Results:** We found out, that values of LA measured after the first 6 min part in the flume were statistically significant lower than values of LA measured on the same levels of HR on the bicycle ergometer. Values of LA second parts in the flume, at level that corresponds to the anaerobic threshold in the flume, were also statistically significant lower than on the bicycle ergometer. Contrarily we did not find out statistically significant differences comparing values of LA of the third parts.

**Key words:** heart rate, lactate, swimming treadmill - flume, bicycle ergometer, critical swimming speed, anaerobic threshold