

## **Abstract**

### **Title:**

Testing of Maximum HR in the Swimming Flume and Swimming Pool

### **Objectives:**

The aim is to compare the detection method of max HR in a swimming Flume with the method of detection max HR in the classic swimming pool. By meeting other goals we want to determine which method is more precise, what the positives and negatives of individual measurements show and what the difference are practically max values observed in HR pool and the Flume compared with the results of theoretical calculation max HR.

### **Methods:**

According to a pilot study with methodology of the thesis,  $HR_{max}$  was tested in a swimming Flume and the methodology according to Formanek and Horčič  $HR_{max}$  testing was carried out in the swimming pool. A sample of probands were selected from students UK FTVS. For the recording was used sporttester and data evaluation program execution Polar Precision Performance. To determine the submaximal swimming speed we used CSS test. This rate was also used to warm up before swimming test to the individual  $HR_{max}$  of probands in a swimming Flume. The measured data of both measurements were compared with each other and the results described and evaluated.

### **Results:**

CSS gained speed in m/s, was used in the Flume in escalations test to  $HR_{max}$ . We measured values  $HR_{max}$  tests in a Flume and in a swimming pool. The Test in the Flume lasted an average of 0:17:53, the Test in the swimming pool took an average of 0:19:24. Average  $HR_{max}$  in a Flume was 186 beats/min and the mean  $HR_{max}$  in swimming pool was 189 beats/min. The average lactate values were in Flume 10,281 mmol/l and in a swimming pool 12,52 mmol/l. We compared them with each other and with the teoretical calculation  $HR_{max}$ . Analysis of the results showed that the test was more appropriate  $HR_{max}$  test in the swimming pool. No statistically significant difference between the values  $HR_{max}$ , but has been proven between the values of lactate.

**Key words:** Swimming flume, swimming speed, maximum heart rate ( $HR_{max}$ ), Critical Swim Speed (CSS), lactate