

## **ABSTRACT**

### **Title of master thesis**

Muscular strength and body composition in sport climbers

### **Work objectives**

The main objective of this study is to compare the muscular strength and body composition in recreational and elite climbers.

### **Methods**

Testing of 77 climbers who were divided into 3 groups was carried out on the climbing wall. There was rated muscular strength by the motor tests and body composition by the bioimpedance. And their relation to the climbers performance. Results were evaluated by multivariate analysis of variance (MANOVA)

### **Results**

Results of our diploma study demonstrated that climbers with higher of RP (8 and more UIAA) have lower weight (men  $69,5 \pm 9,8$  kg and women  $57,7 \pm 4,0$  kg) and body fat (men  $10,2 \pm 2,3$  % and women  $17,4 \pm 0,8$  %), higher static muscular strength of the forearm and muscular endurance of upper limbs. The best results were reached at the tests with the bent arm hang (men climbers  $68,1 \pm 22,6$  s and women climbers  $58,9 \pm 3,3$  s) and hang on plinth (men climbers  $61,7 \pm 19,2$  s and women climbers  $45,6 \pm 12,5$  s). Climbers with climbing efficient 6-7 UIAA weighted averagely men  $70,72 \pm 8,24$  kg and women  $64,77 \pm 5,02$  kg. Percentage of body fat was  $10,22 \pm 2,6$  % for men and  $21,13 \pm 3,1$  % for women. In the tests of bent arm hang and hang on plinth men hold for  $48,44 \pm 12,4$  s,  $37,45 \pm 14,1$  s and women hold for  $37,62 \pm 20,0$  s,  $34,10 \pm 28,34$  s. The last group was created from climbers who climbs the score of difficulty 3 – 5 UIAA. Their

average weight was  $79,78 \pm 10,3$  kg for men and  $62,65 \pm 9,8$  kg for women. Percentage of body fat was  $13,12 \pm 2,2$  % for men and  $21,48 \pm 3,6$ % for women. In the tests of bent arm hang and hang on plinth men hold for  $32,56 \pm 16,7$  s,  $22,90 \pm 12,5$  s s and women hold for  $23,85 \pm 14,54$  s,  $12,71 \pm 18,4$  s.

**Key words**

Muscular strenght, body composition, sport climbing, Eurofit, bioimpedance, MANOVA.