Changes of ergometric parameters of anaerobic power during programmed strength training

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Introduction
Adaptational changes which take part in our body during exposure to chronical physical activity involve changes of muscle metabolism as well. Anaerobic capacity of human may be determined with different types of tests. One of them is Wingate anaerobic test for ergometric measurement of components of anaerobic power. Today we know that there are two basic types of muscular fibbers: slow twitch and fast twitch. Fast twitch fibbers are based on well developed short termed glycolitical system for the energy transfer. Fast twitch fibbers are activated when strong, short muscular contractions appear. On the contrary, slow twitch fibbers are based on the aerobic sources of energy.

Methods
The purpose of this study was to follow up changes of anaerobic capacity during 8-wk programmed strength training. A group of 12 healthy, male students was formed. The candidates were previously not engaged in any type of organized physical activity, at least for 6 months prior the study. The training program was based on dynamic type of strength training with concentric and eccentric components. The program consisted of 3 training sessions/wk, and lasted for 8-wks. Each training sessions was performed in pyramid manner, with 5 series per exercise. The level of weight was increasing with each series of exercise, and the number of repetitions in each series was proportionally decreasing. The parameters of anaerobic strength were determined by Wingate anaerobic test, lasting 30s. The tests were performed at the beginning, and at the end of 8-wk program.

Results
The results of each examiner at the beginning of the test served as a control sample and they are compared with the parameters which are got at the end of eight week training. The analysis of results of height and weight shows the high level of group homogeneity in both periods of measuring. After 8-wk of programmed strength training, statistically significant gain of these values were recorded: Peak power (651W vs. 731.82W; p<0.05), peak power/body mass (9.11W/kg vs. 12.21W/kg; p<0.01), and index of fatigue (46.83% vs. 63.5%; p<0.01).

Discussion/Conclusion
Training programs which aim is to improve physiological system of an organism in the response on chronical load engage different adaptational mechanisms of an organism. Applied eight week strength training program led to the gain of peak power index for 80.86 W (actually for 34.03 %). This gain is the result of adaptation of neuromuscular system and metabolical muscles’ capacities to chronical load. Programmed strength training with concentric and eccentric components has induced gains in parameters of anaerobic capacity of previously non athletic persons.

References