



WYŻSZA SZKOŁA SPOŁECZNO - PRZYRODNICZA
im. Wincentego Pola W LUBLINIE
UNIVERSITY OF VINCENT POL

20-816 Lublin, ul. Choiny 2

tel. /fax + 48 81 740 72 40, +48 81 740 25 04 infoenglish@pol.edu.pl www.wssp.edu.pl

Kinga K. Borowicz

SUMMARY

Biochemical and pathophysiological aspects of physical activity

Muscle fiber contraction requires energy from the breakdown of ATP and phosphocreatine. The two compounds are available at the resting state, however, in amounts that may cover energetic requirements for only several seconds. Therefore, the main sources of energy for long-term activity remain oxidation of glucose (at first aerobic, then anaerobic) and β -oxidation of free fatty acids. In physiological conditions, protein breakdown covers not more than 5-10% of the demand. Anaerobic glycolysis, as a source of lactic acid, plays a crucial role in muscle fatigue development. Local metabolic acidosis significantly limits efficiency of muscle contraction. The lactate threshold is a useful measure for deciding exercise intensity for training and racing in endurance sports.

Physical exercises are usually divided in several types, eg: aerobic, anaerobic, isotonic, isometric, and isokinetic ones. Another classification includes other four basic categories — endurance, strength, balance, and flexibility. It should be stressed, however, that adaptation to training significantly differs between aerobic and anaerobic exercises.

Every type of exercise brings health benefits. Physical activity is increasingly used in prevention and prepharmacological treatment of hyperlipidemias, atherosclerosis, ischemic heart disease, hypertension, osteoporosis, fibromyalgia, and depression.