RESTING METABOLIC RATE AND INTERINDIVIDUAL DIFFERENCES IN ADULT MALE ENDURANCE ATHLETES

Author: Mg. sc. sal. in Nutrition Science Linda Slezina[1],
Scientific research supervisor: Dr. biol., the associate professor of RSU, Latvia - Dace Reihmane[1]
[1]Riga Stradins University, Latvia

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Introduction. As one of the most active groups in the population, elite athletes possess higher energy needs for daily training and recovery than the rest of the population. Meeting energy requirements is a nutritional priority for athletes to maintain appropriate body weight and composition in order to achieve peak performance in sports. As such, being able to accurately determine the energy requirements of athletes is an important component of developing nutritional plans and providing recommendations to enhance sports performance. Under- or overestimation of athletes' energy requirements could result in a loss of body mass, increase in fat mass, compromise of sports performance, increase in the risk of sports injuries and, potentially, growth failures in young athletes. Estimation of resting metabolic rate (RMR) using the factorial method has become the main approach for the estimation of energy requirements.

Aim. The aim of the present research is to define RMR of adult male endurance athletes and to analyze the role of constitutional and environmental factors in determining the individual differences. The tasks of the study is 1) to measure the RMR by indirect calorimetry and, by obtaining the data of the

athletes` constitution, total energy flux/24 h, the thyroid hormone level, define its role in determining the individuals' RMR; 2) to find out the factorial equation/-s, if any, which predicts RMR closest to the value measured by indirect calorimetry.

Methods and materials. The methods of the study are bioelectrical impedance, indirect calorimetry, the 3-day food and physical activity diary, blood analysis, VO_2 max test, factorial equations. The participant selection principle is goal-directed.

Results. The results of the research show, that the mean RMR of adult male endurance athletes in Latvia is 2174 kcal/d. Resting metabolic rate correlates best with the body surface area (r = 0,42), nevertheless it can be predicted even more precisely, when based on a number of variables, i.e. height, VO_2 max and the mean energy intake (r = 0,70).

Conclusions. For a precise evaluation of an individual's RMR, the use of indirect calorimetry is recommended: on individual basis, all the equations demonstrated considerable variability between measured and predicted RMR (254 – 487 kcal). In condition where this technique cannot be used, the two equations developed by De Lorenzo and Cunnigham predict the RMR of athletes better than any of the other tested prediction equations, i.e. within 256 and 254 kcal.