61 EFFECT OF VARIATIONS IN TRAINING LOAD ON MECHANICAL EFFICIENCY IN ATHLETES

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This study was carried out to describe the changes in mechanical efficiency with incremental training load in long distance runners. To achieve this, 10 healthy male national level long distance runners aged 18–22 years were covered during their transition (TP), pre-competitive (PP) and competitive (CP) phases of training. They were subjected to anthropometry and body composition (skin fold method) using standard methods. The basal metabolic rate (BMR) and at different loads of graded exercise test were measured by open circuit indirect calorimetry. Bruce protocol was adopted to assess VO_2max mechanical efficiency and maximal work performance (WRmax) of the athletes. The quantification of training was done by time allocation pattern combined with heart rate monitoring method and oxygen consumption levels. The results of the study show that an increase in training intensity by 1.5-fold and duration by 2-fold manifested the changes in lean body mass (4.6%), BMR (15.5%), VO_2max (18%), maximal work performance (37%) and mechanical efficiency (4%) from TP to CP. Thus, this study suggests that mechanical efficiency reflecting the efficiency in muscular activity can be achieved by metabolic and physiologic adaptations resulting from enhanced training load. In athletes this would help them achieve better endurance performances. Such data would help the coaches to understand the training adaptability of the athletes and current muscular efficiency level that enables to modify the training schedule to achieve optimal sports performance.