

# **ABSTRACT**

## **Title:**

The relevance of Bosco test for determination of healthy oriented efficiency adolescents

## **Objective:**

The main objective is to find and describe the relationship of Bosco test (60 s) to a specific level of health-related fitness among adolescents based on the comparison of the output parameter of Bosco test and test items EUROFIT at physically active and inactive boys and girls. The partial objectives are to describe the influence of anthropometric parameters, gender and competence to physically active people on the current level of power parameters of the lower limbs.

## **Methods:**

The dissertation has the character of empirical research, it is a descriptive study in which the research has a nature of the association, ie., that the required data are obtained by observation. The study was carried out on a group of purposefully selected probands  $n=100$  age  $18.40 \pm 0.83$  years, a period of adolescence. In the study group was equal representation of boys  $n=50$  (age  $18.50 \pm 0.84$  years) and girls  $n=50$  (age  $18.38 \pm 0.82$  years). Anaerobic capacity and power parameters of the lower extremities were determined by a standardized jumping Bosco test (60 s). The results of laboratory and anthropometric survey results were referenced by a test battery EUROFIT, which provides information on health-related fitness. Physiological, anthropometric and biochemical parameters were measured by standardized tests in Charles University biomedical laboratory.

## **Results:**

In the observed group were shown close relationships between the performance in Bosco test expressed by a parameter of relative work and items of EUROFIT describing the power endurance parameters of lower limbs. The relationship of seven independent variable test items with a dependent transfigured relative work was explained from the 60 %. The biggest influence on performance to Bosco test had a test sit - ups, which as only one recorded the significant strenght of the test. Model of three strongest independent variables tests, jump out of place, sit - ups and endurance running explained significant ( $p<0,05$ ) 61 % effect on the dependent variable relative work of Bosco test. The results of this model can predict the specific level of health-related fitness of the population.

It was found that anthropometric parameters significantly ( $p<0,01$ ) affect the performance in Bosco test, only the item height in a group of sporting girls recorded a close relationship with

the performance of Bosco test. The closest relationships between parameters of laboratory testing and performance in the Bosco test recorded population of sporting girls, especially in items of flying duration and absolute work in test  $r > 0,9$ . In none group of boys was found close relationship with the laboratory measurements.

The boys showed significantly ( $p < 0,01$ ) better results than girls in all the test items apart from the test of flexibility. The level of physical activity of the population have reflected in the results of measurements of all items when population of sporting boys and girls showed significantly better results than no sport population, especially in tests describing power endurance capabilities. A group of boys recorded a very strong dependence  $r > 0,7$  of items describing the force parameters and performance in Bosco test, girls recorded only medium strength dependence  $r < 0,7$ . For the sporting population of boys were found no significant dependence on the Bosco test in any entry, while sporting population of girls has recorded very strong dependence of the items dynamometry and jump out of place. Based on the findings the meaning of Bosco test for the objectification of health-related fitness in this group of age can be confirm only for the population of sporting girl.

**Key words:**

anaerobic capacity, power parameters of the lower limbs, health-related fitness, Bosco test, test battery EUROFIT