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SPIROMETRIC STUDIES IN CHILDREN AND ADOLESCENTS AT VRŠAC

ABSTRACT — Great attention is paid to the spirometric studies in the growing and developmental period as it is the phase of life cycle the anthropologists and physiologist are interested in. The aim of the present study was to get an insight into the vital capacity and spiroindex variations in the age ranging between 7 and 18 years and to establish the onset of sexual dimorphism for this functional feature.

KEY WORDS: Children and adolescent spirometry — Yugoslavia — Vital capacity variations.

MATERIAL AND METHOD OF INVESTIGATION

The spirometric measurements were conducted in the total of 1246 schoolchildren of both sexes, aged 7–18 years at Vršac in autumn 1981. There were 601 males and 645 females.

The vital capacity was measured by the water spirometer after Bernstein (1975). The measurements were performed three times and the highest value was recorded in the chart.

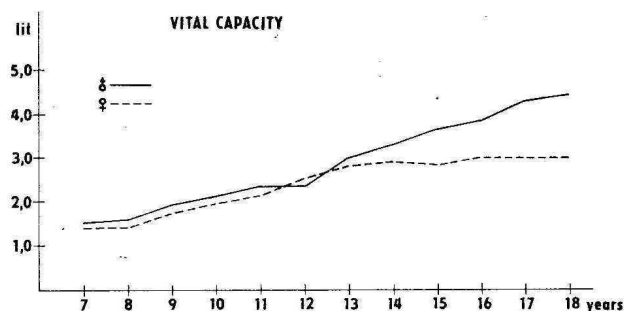
The spiroindex was calculated after Lorenz from the vital capacity and body height using the tables for rapid computation of the spiroindex by Djordjević (1980).

The values obtained were analyzed by the variation-statistical method and the differences between the means were tested by the *t*-test.

RESULTS AND DISCUSSION

Graph 1 demonstrates the curves of the vital capacity means in children and adolescents by sex and age.

The vital capacity means were observed to be higher in boys than girls after the age of 13 years. In the range 7–13 years of age the differences between the means were not statistically significant.

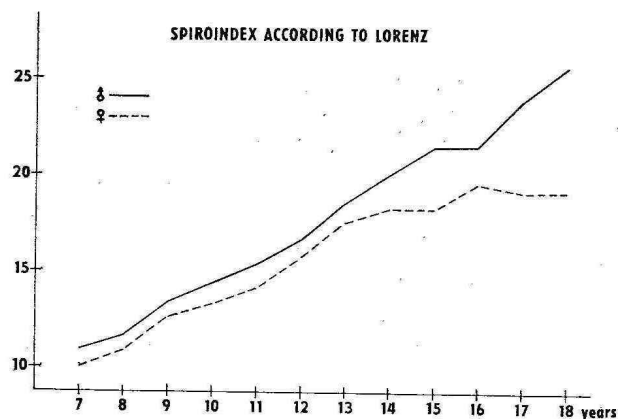


The vital capacity was higher in 18-years old boys (4580 ml) than in girls of the same age (3240 ml).

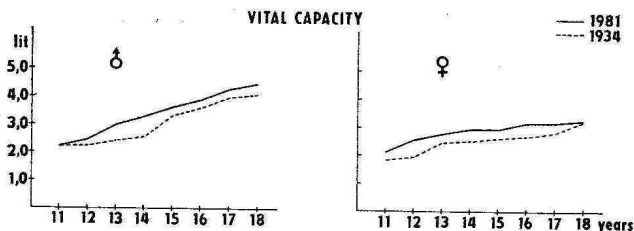
Graph 2 illustrates the variations of the Lorenz index by sex and age.

The spiroindex means were characteristically higher in boys than girls in all age groups and the differences of the means were statistically significant over the age of 13 years.

The spiroindex was higher in 18-years old boys (25.92) than in girls of the same age (19.23).



The comparison of the vital capacity values in schoolchildren aged 11–18 years and the data of about 50 years ago (Štambuk, 1937) clearly reveals (Graph 3) that modern generations of schoolboys aged 13–16 years have the higher vital capacity compared to the boys 50 years ago. 11–17-year old schoolgirls have the higher vital capacity compared to the girls of the same age 50 years ago.



The present investigations have demonstrated that sexual differences in the vital capacity appear at

the age after 13 years and it is the period when puberty changes begin in boys. The above finding is also evidenced by the spiroindex data which are in favour of the boys above the age of 13 years.

The comparison of the vital capacity showed that it was higher in the modern generations of schoolboys aged 13–16 years and schoolgirls aged 11–17 years than in their counterparts of the same age 50 years ago.

CONCLUSION

From the results of our investigations the following conclusions can be drawn:

1. In the vital capacity and spiroindex sexual dimorphism occurs after the age of 13 years.
2. The vital capacity is higher in 18-years old boys (4580 ml) than in girls of the same age (3250 ml).
3. The spiroindex is higher in 18-years old boys (25.92) than in girls of the same age (19.23).
4. Modern generations of the schoolboys aged 13–16 years and schoolgirls aged 11–17 years have higher vital capacities relative to the boys and girls of the same age about 50 years ago.

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