

ORAL PRESENTATION

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# Study on the impact of the angular value of scoliosis, the number and length of the curves on physical capacity of affected girls

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## Purpose of the study

To determine the influence of the scoliosis angle, the number and the length of the curves on physical capacity of affected girls.

## Background

Physical capacity determines the organism's ability to make a physical effort, to tolerate dysfunctions of endogenous homeostasis caused by the physical effort and to quickly regain balance [1][2]. Idiopathic scoliosis (IS) is a systemic disease affecting function of the cardiopulmonary system and impairing patient's physical capacity [3,5,6].

## Materials and methods

Ninety-seven girls, aged 10 to 18, seventy idiopathic scoliosis and 27 controls participated in the study. To determine the physical capacity, the indirect method comprising the PWC170 test was used and maximal oxygen uptake ( $VO_2$  max, l/min) was calculated [3,5]. Girls with moderate IS (Cobb 25°-40°) and mild IS (Cobb up to 25°) were analyzed separately.

## Results

The  $VO_2$  max value (l/min) and the PWC170 index were significantly lower in girls with moderate IS compared to control group. No difference was found between mild IS and controls. No influence of the number of curves and the length of scoliosis on  $VO_2$  max (l/min; ml/kg/min) and the absolute capacity value (W) was found. A significantly lower value of the PWC 170(W/kg) index was observed in girls with double scoliosis and girls having the curve over 9 vertebrae.

## Conclusions

Girls with moderate IS presented lower  $VO_2$  max compared to controls. Physical capacity of mild IS was not significantly different from controls. Girls with double scoliosis and girls having the curve over 9 vertebrae had a significantly lower value of the PWC 170 (W/kg) index, moreover no significant effects were found for  $VO_2$  max and PWC 170 (W).

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