Czaprowski et al. Scoliosis 2012, 7(Suppl 1):O61
http://www.scoliosisjournal.com/content/7/S1/O61

Scoliosis

ORAL PRESENTATION Open Access

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

D Czaprowski[1*], T Kotwicki[2], R Biernat[1], A Ronikier[3]

From 8th International Conference on Conservative Management of Spinal Deformities and SOSORT 2011 Annual Meeting
Barcelona, Spain. 19-21 May 2011

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 to18, 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 (VO2 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).

Author details
[1]Faculty of Physiotherapy, Józef Rusiecki University College in Olsztyn, Poland. [2]University of Medical Sciences, Poznań, Poland. [3]Faculty of Rehabilitation, Academy of Physical Education, Warsaw, Poland.

Published: 27 January 2012

References

1. Astrand PO, Rodahl K: **Textbook of work physiology.** New York: Mc Graw Hill; 1986.
2. Cleland V, Wyder T, Blizzard L, Venn A: **The provision of compulsory school physical activity: Associations with physical activity, fitness and overweight in childhood and twenty years later.** *Int J Behav Nutr Phys Act* 2008, **5**:14, doi: 10.1186/1479-5868-5-14.
3. Coast JR, Cline CC: **The effect of chest wall restriction on exercise capacity.** *Respirology* 2004, **9**:197-203.
4. Durmała J, Tomalak W, Kotwicki T: **Function of the respiratory system in patients with idiopathic scoliosis: reasons for impairment and methods of evaluation.** *Stud Health Technol Inform* 2008, **135**:237-245.
5. Hawkins MN, Raven PB, Snell PG, Stray-Gundersen J, Levine BD: **Maximal oxygen uptake as a parametric measure of cardiorespiratory capacity.** *Med Sci Sports Exerc* 2007, **39**:103-107.
6. Koumbourlis AC: **Scoliosis and the respiratory system.** *Paediatr Respir Rev* 2006, **7**:152-160.

doi:10.1186/1748-7161-7-S1-O61
Cite this article as: Czaprowski *et al.*: Study on the impact of the angular value of scoliosis, the number and lenght of the curves on physical capacity of affected girls. *Scoliosis* 2012 **7**(Suppl 1):O61.

[1]Faculty of Physiotherapy, Józef Rusiecki University College in Olsztyn, Poland
Full list of author information is available at the end of the article