**Computer analysis of treatment results of lower longitudinal arch after selected corrective exercises in children aged 3-6 years**

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Doctoral Dissertation – abstract

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**Introduction**

The foot is a very important organ in the body of every human being. It plays an important role in locomotion because it is in contact with the ground. Human foot is a part of static and dynamic motion organ. On the one hand, it is the supporting element, which in static conditions can balance the body in spatial position, on the other hand it fulfills a role of a drive mechanism enabling the body flexion during movement.

**Aim**

The aims of this study were to conduct a screening test to identify defects   
in the foot in children from 3 to 6 years of age, determine the prevalence rates of reduced longitudinal and transverse arches in children’s feet, examine the tendency for prevalence   
of reduced longitudinal and transverse arches in relation to the proportion of the body mass and the height of the child, as well as assess the impact of corrective exercises on the feet with reduced longitudinal and transverse arches.

**Material and Methods**

The study was conducted in the State Pre-school No. 214 in Warsaw in three consecutive rounds: in September 2011, February 2012 and June 2012. The clinical material covered 211 children (422 feet) between the ages of 3 and 6 years who were divided into two groups: group I (study) - 148 children including 67 girls and 81 boys, and group II (control) - 63 children including 26 girls and 37 boys.

In this study, the feet were checked by means of a podoscope examination in static conditions, in an upright position so that the feet were disposed evenly. The longitudinal arch has been assessed on the basis of Clarke's angle (CL) and Sztriter-Gogunow’s index (KY).   
The transverse arch has been evaluated using the GAMMA heel angle and Wejsflog’s index.

**Results**

In my study, based on analysis of Clarke’s angle it was observed statistically significant differences in the formation of the longitudinal arch between the study and control groups, with regard to the following measurements. In the case of this angle it was noticeably significant increase in the number of properly formed feet between successive measurements.

In this study the impact of children’s age on the formation of the foot arch was also observed. A higher percentage of the older children had correctly shaped feet – compared to the younger ones.

**Conclusions**

A change in the body weight in children aged 3-6 years has a significant impact on the normal development of the longitudinal foot arch in girls and boys.

The analysis of the shape of the longitudinal arch in the children from the study group conducted over a period of 10 months shows a significant increase in the number of correct feet between the first and the third measurements, which may be indicative of beneficial effects of the exercises.

Physical activity has positive effects on the shape of the longitudinal arch in   
pre-school children.