

Abstract

Title: Morphological profile of forefoot in school-age children in relation to the volume of physical activities

Objectives: The aim of the thesis is to characterize the morphological profile of the foot with an emphasis on the forefoot and to identify specific differences between selected morphological parameters of the foot in school-age children based on different volumes of physical activity: significantly physically active, moderately physically active and physically inactive children. A secondary goal is to determine the profile of physical activities performed by children of younger school age and the relationship to selected foot deformities.

Methods: The diploma thesis is a scientific-research work and has the character of an observational-descriptive non-experimental study. The research group of the study consisted of school children aged 6-10 years from three primary schools in Prague (average age 8 ± 1.2 years, body height 132.8 ± 8.6 cm, weight 29.9 ± 7.7 kg, BMI 16.8 ± 16.8). The following dependent variables were measured: foot typology, function of the windlass mechanism of the foot, metatarsophalangeal joint stiffness of the big toe, and forefoot deformities between groups divided by the PAQ-C/CZ physical activity questionnaire. Questionnaire methods, a 3D leg scanner and selected clinical methods were used for objectification.

Results: In the research sample, 21% had at least one foot with hallux valgus deformity (HV angle above 10°), 71% valgus of the distal joint of the big toe (angle above 16°), 40% MP joint varus (angle above 16°), 32% rigidity legs and 52% two or more toes on at least one leg with some of the deformities 2-4. finger. Incidences of pronated type of foot (41%) and hyperpronated (28%) were relatively high in the studied group, elevation of the distal joint of the big toe also showed a high incidence (73% right foot). A statistically higher ($p=0.034$) value of the HV angle and the valgus angle of the distal joint of the thumb ($p=0.032$) was demonstrated in the physically inactive group compared to the other active groups. The movement group had a statistically higher ($p=0.009$) varus angle of the MP joint of the little finger compared to the other groups. The existing trend of decreasing physical activity among children of younger school age was

confirmed (average PAQ-C/CZ score for girls 2.25, in boys 2.48). The most common activities observed in the study were athletics, cycling and hiking. The specifics of the morphological profile in specific sports activities were described, with a statistically significant relationship between pronated and hyperpronated feet in athletes, the occurrence of a higher valgus angle of the distal joint of the big toe in dancers, and the occurrence of deformities 2-4. finger in football players. The thesis showed multifactorial influences on the morphological profile of the forefoot. However, in terms of the volume of physical activity, the relationships between all monitored variables were not proven.

Keywords: foot type, pronated foot, hallux valgus, hammer toes, claw toes, inactivity, sports, tailors bunion, 3D foot analysis