

# FREQUENCY OF FLAT FOOT DEFORMITIES AMONG THE CHILDREN OF FIRST CYCLE OF PRIMARY SCHOOL

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*Original research:*

## Abstract

Flat foot is a very common deformity in the population of primary school children. The neglect of physical activity caused by the modern way of life is highly correspondent with the increase in the presence of this deformity. The purpose of this research was to determine the level of foot deformities among children of the first cycle of primary school. This research includes a sample of 120 children, divided into two subsamples: 60 male, and 60 female children, of the first cycle of „Milija Nikčević“ primary school in Niksic. Considering obtained results can be said that 42 children (71% male and 29% female) have a flat foot (pes planus). By analyzing the data it is confirmed that 35% of the sample has flat feet and the rest of the children have a hollow feet or normal feet. Regarding the above mentioned can be concluded that children should be subjected to preventive measures by lecturers and parents in order to prevent the development or appearance of the same deformities of children in this and older age.

**Keywords:** children, deformity, flat foot, frequency

## Introduction

The children are increasingly exposed to the problems of deformities caused by hypokinesia as one of the main issues of the digital era in which we live. Basically, children have a spontaneously active life through games and exploring the surrounding until they start to the first grade of primary school when hypokinesia increases by spending more time in a seated position (Bjelica, 2006; Bjelica & Petkovic, 2010). Also, one of the main reasons of increased hypokinesia, postural problems, and deformities are contemporary technologies and 'facilities' of nowadays, such as mobile devices, television, computers, vehicles, elevators in buildings, etc. (Bjelica & Krivokapic, 2010; Grković, 2016).

The existence of a anomaly in the structure or shape of even one bone in the foot causes a disorder in the function of the affected foot. Those malformations increase progressively during growth and cause secondary changes in adjacent segments (knees, hip, spine). Initial indicators of foot deformity are usually expressed by changes in the shape and position of the feet, which are affected by biomechanical forces that, during loading, most often, change the feet functionally, aesthetically and structurally (Jovovic,

2008). To successfully treat the deformity, early diagnosis and initiation of therapy are required, to interrupt the course of the evolution of the deformity and to bring the feet back to their natural normal shape. (Jovovic, 1999, 2008). Foot deformity in the form of a hollow foot often occurs in athletic type individuals. Some studies show that people with hollow feet, in some sports disciplines, achieve the same or very similar results as people with normal feet (Jovovic, 2008). One of the most important prevention moves is systematic examinations of preschool and school-age children in the service of early detection of congenital and acquired anomalies in the development of mentioned ages. Forming proper body posture, in addition to other important factors, depends mostly on the involvement of parents, educators, teachers, and professors in preventive and corrective programs. (Protic-Gava et al., 2009; Vasiljevic, Bjelica, Popovic, & Gardasevic, 2015).

Regarding the abovementioned, the main goal of this paper is to determine the differences in the numerical and percentage values of different stages of flat foot deformity among primary and secondary school children.

## Methods

The sample in this study consisted in a total of 120 children of the first, second and third grade primary school "Milija Nikčević" from Niksic. The sample was divided to two sub samples: 60 students of male and 60 female children, aged 6-9. Foot deformities have been detected by modern innovation technology (podoscope). The results obtained in this study were processed by a descriptive statistics procedure, as shown by the numerical and percentile values of the treated deformities.

## Results

Considering results in Table 1 evident is that 65 subjects had normal feet (26 male and 39 female). From the abovementioned, we can say that the prevalence of deformity is higher among male subjects.

Considering flat foot deformity, the total representation of flat foot in both genders is 42 subjects. It is evident that 30 male subjects had this type of deformity, while only 12 female subjects had a flat foot. It should also be mentioned that the deformity of the hollow foot was observed and 13 subjects had this type of deformation, but this deformity is more prevalent in female respondents.

Chart 1 shows the percentage of deformation of flat, normal and hollow feet. Of the 42 subjects who had a flat foot deformity, 71% were male and 29% female, which is more than a worrying deviation.

Chart 1. Incidence of foot deformity in relation to the total number of subjects in percentages

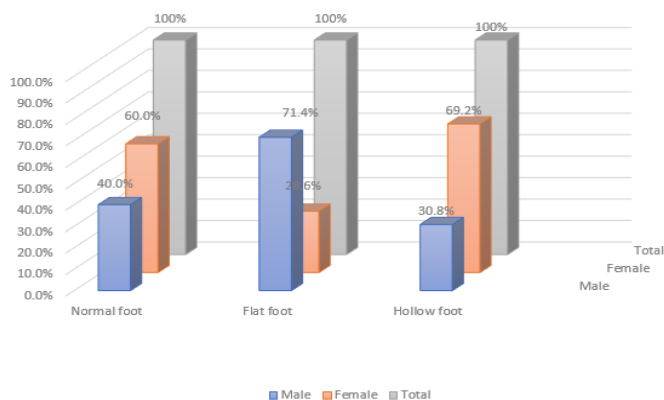


Chart 2. The frequency of flat foot deformity with respect to gender

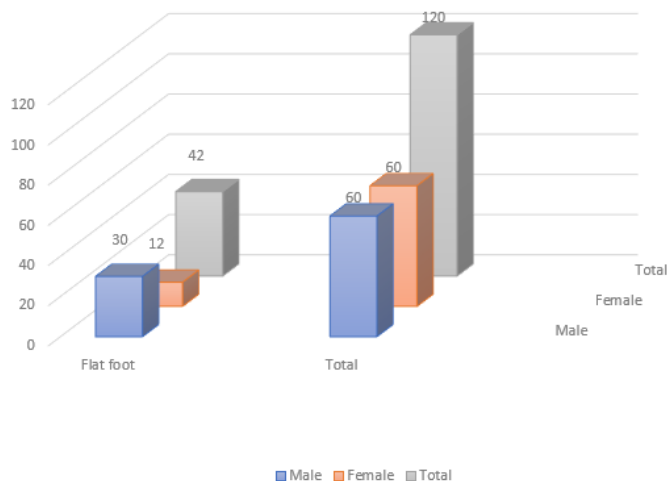


Chart 3. Incidence of flat foot deformity in relation to the stages of deformation

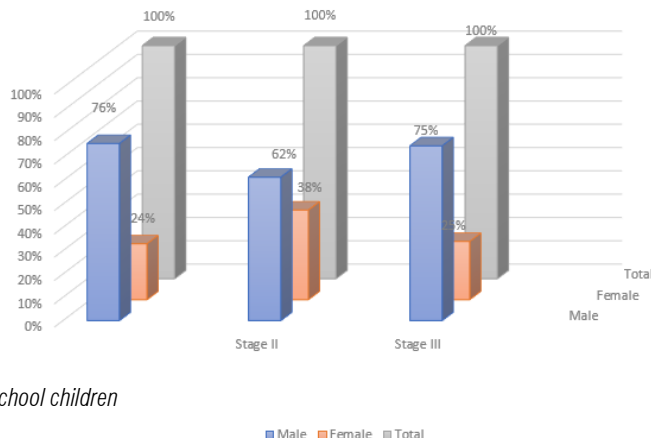


Table 1. Prevalence of foot deformity in primary school children

Subjects	Normal foot	Flat foot	Hollow foot
Male (n=60)	26	30	4
Female (n=60)	39	12	9
Total	65	42	13

In chart 2, the representation of flat foot deformity in the sub-samples and the overall sample is shown. Of

the 42 subjects who had a flat foot deformity, 30 were male and 12 were female gender.

In this research also is evaluated the flat foot deformity according to the stages of deformation (Chart 3). Thus, it can be said that the higher incidence was in the male than in the female gender, in all stages of flat foot

deformation. Numerically, out of the total of 42 subjects who had a flat foot, 25 was at stage I, 13 at stage II, and 4 subjects at stage III.

## Discussion

The aim of this study was to estimate the numerical and percentage representation of different degrees of flat foot deformity in a sample of subjects from a total of 120 children of the elementary school "Milija Nikcevic" from Niksic, 6-9 years old. The total sample of respondents was divided into two sub-samples, 60 male and 60 female. Considering results in this study can be concluded that the flat foot was noticed in 35% subjects of the total sample, which is in high correspondence with the results of a study conducted by Jovovic (1999), who showed that the frequency of the flat foot in 13-year-old children was quite high and was 37.2%. It is also evident that the incidence of flat foot is more prevalent in male than in female subjects. When considering the stage of deformity, it is evident that more male subjects had flat foot deformity in all three stages. In a sample of preschool children in Novi Sad, Romanov, Stupar, Medjedovic, & Brkin (2014) stated that the flat foot of stage I was noticed in 43.23%, while the flat foot of stage II was noticed in 16.66%. Radisavljevic et al. (1982) conclude that the incidence of the flat foot was 67.6% in first-grade primary school children.

Based on the mentioned above, it can be concluded that the obtained results are worrying and is necessary to act right away in a preventive and corrective way, all with the aim of suppressing the aforementioned deformity, which has a direct impact on the further course of life.

## Conclusion

This research has theoretical and practical significance, initially because there is only few scientific papers with the aim of discovering the level of deformity of the flat foot in the territory of Montenegro, in this particular case, Niksic. Scientific researches as this one can be of great importance to other researchers who decide to improve and update methods for the prevention and treatment of flat foot deformity in children of a certain age.

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