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ORIGINAL SCIENTIFIC PAPER

Prevalence of Flat Feet among Preschool Children in Leskovac, Serbia

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Abstract

The literature reports a growing number of cases of foot deformities in preschool children. The aim of this research was to determine, using a podoscope, the prevalence of flat feet (pes planus) among preschool-aged children in Leskovac. The sample of respondents consisted of 100 children from the preschool institution "Vukica Mitrović" from Leskovac, aged 4 to 6 years. Of all children, 46% were boys and 54% were girls. The results showed that 72% of children have flat feet and only 28% of children have normal feet. Of the total number of children, 30% had pes planus first degree (PP1), 23% had pes planus second degree (PP2), 14% had pes planus third degree (PP3), and 5% had pes planus fourth degree (PP4). The chi-square (χ^2) test of independence did not show a significant relationship between gender and foot status in children. This means that flat feet are equally represented in boys and girls without a significant difference. Research has shown that the prevalence of flat feet in preschool children decreases over time. Namely, the prevalence of flat feet in 4-year-old children is 90.9%, in 5-year-old children 74.4%, and in 6-year-old children 57.1%. The obtained data show that children from Leskovac do not lag behind children from other cities of Serbia, Europe, and the world in the prevalence of flat feet. The obtained results are an alarm for educators to devote more time to organizing physical education games that will encourage the development of the foot muscles and enable the natural development of the longitudinal arch of the foot, which would reduce the percentage of children with flat feet, and thus the eventual consequences of that condition.

Keywords: *flat foot, preschoolers, foot deformities, postural disorders*

Introduction

The number of children with postural disorders is constantly increasing (Nikolić et al., 2024a). The preschool period represents a very sensitive developmental age (Kojić et al., 2021), an age when accelerated growth occurs, and accordingly, time is needed for the skeleton, musculature, and ligaments to adapt to increasing daily challenges (Kapo et al., 2020). It is a period in which children develop fine and gross motor coordination through participation in physical activities, and it is also the period during which a child's body posture is formed (Jankowicz-Szymańska & Pociecha, 2012). Then the postural status of children is exposed to a great risk (Nikolić et al., 2024b). The urban environment, combined with modern living conditions, has reduced the inherent human need to move. One of the consequences is the increasing frequency of deformities and postural disorders, especially in children (Aleksandrovic & Kottaras, 2015).

The literature reports on the growing number of cases of foot deformities in preschool children (Mihajlović, Tončev, & Hmjelovjec, 2008), which are frequent causes of parental concern (Alvi & Wilson, 2017; Rerucha, Dickison, & Baird, 2017). The foot is one of the most complex anatomical segments of the human body (Anđelković et al., 2018), and its proper anatomical structure largely depends on stable posture as well as efficient and aesthetically appropriate gait (Jankowicz-Szy-

manska & Mikolajczyk, 2015). A healthy foot, in children and adults, rests on three points: the heel bone, the joint of the first metatarsal bone, and the fifth metatarsal bone. The arches extending between these three points form the structures that constitute the longitudinal and transverse arches of the foot (Kojić et al., 2021). Flat feet (pes planus) are one of the most common deformities of the lower extremities that result from the collapse of the physiological arches of the feet (Živković, Karaleić, & Anđelković, 2018). A flat foot is a condition where the entire foot is on the ground, when the entire sole comes into complete or almost complete contact with the ground (Nurzynska et al., 2012; Yulianti, Efendi, & Lubis, 2023), that is, when the foot carries the weight of the body with an abnormally low or absent medial longitudinal foot arch (Ibeabuchi et al., 2020) with or without additional foot and ankle deformities (Kaymaz, 2022). It can be classified into two types: flexible flat foot and rigid flat foot. Both types of flat feet may or may not have symptoms (Kim et al., 2023); however, in flat feet, the arch is usually flexible rather than rigid (Rerucha, Dickison, & Baird, 2017). In a flexible flat foot, the medial longitudinal arch of the foot collapses during weight bearing and rebuilds after weight removal, i.e., no weight bearing (Pourhoseingholi & Pourhoseingholi, 2013). A flat foot in children that is flexible, painless, and without functional consequences is considered physiological (Carr, Yang, & Lather, 2016). In some rare cases, flat feet may become painful or stiff and may be a sign of pathology (Kaymaz, 2022). In addition to the mentioned division, flat feet can be congenital or acquired (Nurzynska at al., 2012). It is important to know that all healthy babies are born with flexible flat feet (Kojić et al., 2021; Nurzynska et al., 2012; Pourhoseingholi & Pourhoseingholi, 2013) and that the medial longitudinal arch of the foot develops during the first ten years of life (Kojić et al., 2021). The development of the arch of the foot is rapid between the ages of 2 and 6 and becomes structurally mature around the age of 12 or 13 (Pourhoseingholi & Pourhoseingholi, 2013). For most children who have flat feet, it is a physiological condition that gradually disappears with age (Octavius et al., 2020). Arches develop in early childhood as part of normal growth and development, strengthening bones, ligaments, muscles, and tendons (Nurzynska et al., 2012). However, flat feet that persist after the age of four may have a developmental coordination disorder in the future (Octavius et al., 2020), which occurs due to misalignment and deformation of bones, weakening of muscles, tendons, and ligaments (Nurzynska et al., 2012). Physiological flat foot in children will become pathological if it continues with age (Yulianti, Efendi, & Lubis, 2023).

Previous research indicates a relatively high prevalence of static foot deformities in children. In the study by Puzović et al. (2015), it was found that 64.06% of children aged 10–12 years had some form of foot deformity, with flat feet being the most common. Similarly, Mitrović and Stević (2022) reported a prevalence of 63% in a sample of younger school-age children. Pfeiffer et al. (2006), in their study of children aged 3–6 years, identified flexible flat feet in approximately 44% of participants. Lower prevalence rates were reported by Senadheera et al. (2016), where flat feet were observed in about 16% of children aged 6–10 years. These findings indicate that the prevalence of foot deformities varies considerably depending on age and research methodology.

In line with previous studies, there is a lack of data on the postural status of the foot arch in preschool children from this region of Serbia. Furthermore, the rationale for this study lies in the use of modern diagnostic procedures, as earlier research often relied on methods with a higher degree of subjectivity and lower sensitivity.

The aim of this study was to determine the prevalence of flat feet in preschool children in Leskovac. This research provides clear information on the postural status of the foot arch in preschool-aged children in this part of Serbia, using a modern diagnostic procedure with a high level of accuracy.

Methods

Participants

The sample in this study consisted of 100 children from the preschool institution "Vukica Mitrović" in Leskovac. Of the total number of participants, 46 (46%) were boys and 54 (54%) were girls. The children were aged between 4 and 6 years: 22 children were 4 years old (22%), 43 were 5 years old (43%), and 35 were 6 years old (35%). The parents were informed about the purpose of the study and provided consent for their children's voluntary participation. Meetings with parents were organized by the preschool teachers and were approved in advance by the directors of the institution.

All measurements were conducted in accordance with ethical principles for human research, in line with the 2008 Declaration of Helsinki (World Medical Association, 2011).

Procedure

The assessment of the postural status of the foot arch was conducted in the previously mentioned preschool institution. Testing conditions were standardized and optimal, including appropriate lighting, temperature, and humidity. All measurements were performed in the morning, between 10:00 and 12:00.

During the measurement procedure, participants reported to the examiner, removed their shoes and socks, and stood on the podoscope. After approximately 5 seconds, the children stepped off the device and resumed their activities, while the software analyzed the recorded data (Milenković et al., 2011). Measurements were carried out according to a predetermined schedule that was communicated to the educators in advance.

Measurements

The assessment of the postural status of the foot arch was performed using a podoscope ("Pedic", Budapest, Hungary) in combination with basic software (Bubanj et al., 2021; Milenković et al. 2011). In this way, it is possible to identify a normal foot (NF) and pes planus (PP). Subsequently, pes planus is classified into several levels depending on the degree of deformity, namely: pes planus first degree (PP1), pes planus second degree (PP2), pes planus third degree (PP3), and pes planus fourth degree (PP4).

Statistics

The data obtained from the testing were analyzed using SPSS statistical software, version 20 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics, including frequencies and percentages, were used to present the postural status of the foot arch in children. The chi-square (χ^2) test was applied to examine differences between genders, with the level of statistical significance set at $p<0.05$.

Results

The results presented in Table 1 show that 72% of children had pes planus (PP), while only 28% had normal foot posture (NF). Of the total sample, 30% had pes planus first degree (PP1), 23% PP2, 14% PP3, and 5% PP4.

The chi-square (χ^2) test of independence showed no significant association between gender and foot status in children ($\chi^2(n=100)=7.221$, $p=0.125$, Cramer's $V=0.269$). This indicates that PP is similarly distributed among boys and girls, with no significant differences. The prevalence of pes planus first degree (PP1) was 26.1% in boys and 33.3% in girls; PP2 was 26.1% in boys and 20.4% in girls; PP3 was 13.0% in boys and 14.8% in girls; and PP4 was 10.9% in boys and 0.0% in girls. The proportion of children with normal foot posture (NF) was 23.9% in boys and 31.5% in girls, while the overall prevalence of pes planus (PP) was 76.1% in boys and 68.5% in girls.

Table 1. Chi-square test of independence of the relationship between gender and foot status of preschool children

Gender	Foot status					Chi-Square		
	NF	PP I	PP II	PP III	PP IV	X2	p	Cramer's V
Boys	11 (23.9%)	12 (26.1%)	12 (26.1%)	6 (13.0%)	5 (10.9%)			
Girls	17 (31.5%)	18 (33.3%)	11 (20.4%)	8 (14.8%)	0 (0.0%)	7.221	0.125	0.269
Total	28 (28%)	30 (30%)	23 (23%)	14 (14%)	5 (5%)			
∑	28 (28%)	72 (72%)				/		

Note. NF - Normal foot; PP - pes planus; PP1 - pes planus first degree; PP2 - pes planus second degree; PP3 - pes planus third degree; PP4 - pes planus fourth degree.

At the age of 4, the prevalence of pes planus was 90.9%, distributed as follows: PP1–36.4%, PP2–36.4%, PP3–9.1%, and PP4–9.1%. At the age of 5, the prevalence was 74.4%, with PP1–34.9%, PP2–16.3%, PP3–16.3%, and PP4–7.0%. At the age of 6, the prevalence of pes planus was 57.1%, with PP1–20.0%, PP2–22.9%, PP3–14.3%, and PP4–0.0%.

Table 2. Prevalence of flat feet in preschool children according to calendar age

Age group (yrs)	Foot status					
	NF	PP I	PP II	PP III	PP IV	∑ PP
4	2 (9.1%)	8 (36.4%)	8 (36.4%)	2 (9.1%)	2 (9.1%)	20 (90.9%)
5	11 (25.6%)	15 (34.9%)	7 (16.3%)	7 (16.3%)	3 (7.0%)	32 (74.4%)
6	15 (42.9%)	7 (20.0%)	8 (22.9%)	5 (14.3%)	0 (0.0%)	35 (57.1%)
∑	28 (28%)	72 (72%)				

Note. NF - Normal foot; PP - pes planus; PP1 - pes planus first degree; PP2 - pes planus second degree; PP3 - pes planus third degree; PP4 - pes planus fourth degree.

Discussion

The condition of the feet of preschool children causes many controversies, primarily in the definition of flat foot (Kojić et al., 2021). There is no consensus on strict clinical or radiographic criteria for defining flat foot, so the prevalence of flat foot is unknown (Pourhoseingholi & Pourhoseingholi, 2013). Using different procedures to diagnose foot status creates confusion (Kojić et al., 2021). The term flat foot creates confusion in the medical community because it describes a spectrum of conditions that are diagnosed and managed differently (Yeagerman et al., 2011). Due to the above factors, it is difficult to directly compare the prevalence of flat foot obtained in this study with that reported by other authors. In our research, flat foot was classified into four degrees, and measurements were performed using the podoscope described above. For this reason, it is only possible to compare the total prevalence of flat feet in preschool children with some previous research. In that case, the question arises whether the prevalence of flat feet obtained by different methods is at all comparable.

Our research showed that 72% of the children had flat feet, of which PP1 accounted for 30%, PP2 for 23%, PP3 for 14%, and PP4 for 5%, while 28% had normal feet. Mihajlović and Tončev (2008) found that the prevalence of flat feet in preschool children aged 4 to 6 in Novi Sad was high even sixteen years ago, using a podoscope. Their research showed that 80.4% of children had flat feet, with PP1 accounting for 13.77%, PP2 for 26.3%, PP3 for 24.87%, and PP4 for 15.38%. Based on these results, we see that the prevalence of PP1 is higher in our research, and that the prevalence of PP2, PP3, and PP4 was higher among children in Novi Sad in the mentioned period than it is today in Leskovac. This indicates that the foot condition of those children was worse than that of children in Leskovac today. More than twelve years ago, Simov, Minić and Stojanović (2011) used a podoscope to determine on a sample of 968 children from Leskovac aged 6 to 7 that 30.8% of children have flat feet, which is significantly lower than in our research. The representation was as follows: PP1 accounted for 17.7%, PP2 for 8.4%, PP3 for 3.9%, and PP4 for 0.8%. Looking at the prevalence, we can think that a decade later, the condition of the feet of preschool children in Leskovac has worsened; however, one should be careful when making such conclusions because the age of the children in our research is from 4 to 6 years, and in the mentioned research, from 6 to 7 years. Some authors report that the prevalence of flexible flat feet in children aged 2 to 6 years ranges between 21% and 57%, and that it decreases over time, reaching 13.4% to 27.6% in primary school-aged children (Pourhoseingholi & Pourhoseingholi, 2013). In a study of 835 children, the prevalence of a reduced longitudinal foot arch decreased from 54% in three-year-olds to 24% in six-year-olds. This finding is consistent with other studies reporting a continuous decrease in the prevalence of flat feet between the ages of 4 and 10 years (Kojić et al., 2021). Our research also shows that the prevalence of flat feet in preschool children decreases over time. Namely, the prevalence of flat feet in 3-year-old children is 90.9%, in 5-year-old children 74.4%, and in 6-year-old children 57.1%. Mihajlović, Smajić and Sente (2010) obtained the same results using a podoscope on a sample of children aged 4 to 7 years from Novi Sad. The authors determined that the prevalence of pes planus is 78.3%, which is slightly higher than in our study, but also in their study, the prevalence decreases as children get older. The prevalence of flat feet in children aged 4 years is 86.9%, in children aged 5 years 81.4%, in children aged 6 years 71.5% and in children aged 7 years 68.1%. Maksimović and Lertua (2018) confirm these findings. The authors determined that the prevalence of flat feet in children aged 5 years is 88.6%, and in children aged 6.5 years 51.4%. Capo et al. (2020) analyzed 17 scientific studies and determined that flat feet most often occur in children aged 3 to 5 years, and after that age the frequency decreases sharply. Pfeiffer et al. (2006), in a sample of 835 children aged 3 to 6 years, found that the prevalence of flat foot decreases significantly with age, reporting 54% in 3-year-old children and 24% in 6-year-old children. Jankowicz-Szymańska and Pociecha (2012), in a sample of preschool children from Tarnów (Poland) aged 4 to 6 years, also reported that the prevalence of pes planus decreases with age, with older children showing a lower prevalence compared to younger ones. Vergara-Amador et al. (2012) found that the prevalence of flat feet in children in Colombia decreases significantly with age. If children aged 3 to 5 years are observed, the prevalence is 30.9%, and if it is extended to the age of 3 to 10 years, the prevalence of flat foot is 15.7%. That the prevalence of flat foot is lower among older children was determined by Vangara et al. (2016). The authors determined that the prevalence of flat feet in the age group of 3 to 5 years is 60% for the right but also 63.3% for the left foot, and the prevalence in the age group of 14 to 15 years is 16.7% for the right and 30% for the left foot.

Reading these findings, it is important that responsible stakeholders—educators, parents, and physical education professionals—do not assume that the longitudinal arch of the foot will develop spontaneously with growth. Instead, children should be sufficiently physically active to strengthen the foot muscles and support proper arch development.

Gołębiowska-Sosnowska et al. (2019) demonstrated that results may differ, and that the prevalence of flat feet can increase with age. In their sample of preschool children in Łódź (Poland), the prevalence of flat feet increased from ages 4 to 6, from 53.7% at age 4, to 73.6% at age 5, and 77.6% at age 6.

An even higher prevalence of flat feet compared to our study was reported by Mitrović and Stević (2017). Using a podoscope, the authors found that 90% of preschool children from Bijeljina had flat feet, which is considerably higher than in our sample. The distribution was as follows: PP1 accounted for 24%, PP2 for 34%, PP3 for 18%, and PP4 for 14%. Only PP1 prevalence was higher in our study, while PP2, PP3, and PP4 were more prevalent in their research. These findings indicate that the foot status of children in Bijeljina at the time of measurement was in a worse condition than that of children in Leskovac. A few years later, Mitrović et al. (2021), also in Bijeljina and using a podoscope, reported that 92.5% of children had flat feet. Although the overall prevalence slightly increased, PP1 decreased to 1.1%, PP2 increased to 45.7%, PP3 increased to 37%, and PP4 decreased to 8.7%. These results suggest that foot posture status did not improve over time, indicating a persistent high prevalence of flat feet in preschool populations. Although the results of our study are not negligible, those reported in the aforementioned studies are even more concerning.

Romanov et al. (2014) also reported a high prevalence of flat feet in preschool children from Novi Sad aged 6 to 7 years, using a podoscope. The authors analyzed the left and right foot separately, reporting a prevalence of 59.8% for the left foot and 60.2% for the right foot.

Interestingly, Kojić et al. (2021) reported a considerably lower prevalence of flat feet using a podoscope in children aged 4 to 6.5 years. The overall prevalence was 20.3%. However, 44.6% of children had a cavus foot (pes cavus), 20.3% had asymmetrical foot posture between the left and right foot, and only 14.9% had normal foot posture.

In some studies from the region, different methods were used to define flat feet compared to those applied in our study and other cited works. Moreover, even when the same methods were used, interpretations varied between studies. Pavlović (2012), using plantography (Thomson's method), reported a

prevalence of 26% in a sample of 638 children aged 6 to 7 years from Užice, Prijepolje, and Nova Varoš, which was similar to the findings of Simov, Minić and Stojanović (2011). Živković (2009) states that, according to this method, flat feet can be classified into first, second, and third degree; however, Pavlović (2012) reported only overall prevalence. Using the same method, Stanišić, Đorđević and Maksimović (2014) found that 36.7% of children from Kruševac aged 6 years had flat feet, of which 30% were PP1 and 6.7% PP2. It remains unclear whether PP3 was absent or interpreted differently.

Sabo (2006), using the Napoleon Volanski method (NPV), reported a prevalence of 44% in a sample of 1,259 children from Vojvodina aged 3.5 to 7 years, with PP1 at 41.9% and PP2 at 2.1%. In a later study, Sabo (2007) found a prevalence of 54% in children aged 4 to 7 years from Sombor, Sremska Mitrovica, and Bačka Palanka, with PP1 at 50% and PP2 at 0.4%. Drljačić et al. (2016) reported a prevalence of 51.9% in 5-year-old children, with PP1 at 42.3% and PP2 at 9.6%. Maksimović and Lertua (2018) found a prevalence of 70% in children aged 5 to 6.5 years from Šabac, with PP1 at 37.1% and PP2 at 32.9%. Similarly, Galić (2017) reported a prevalence of 45.8% in children aged 5 to 7 years from Novi Sad, with PP1 at 28.3% and PP2 at 17.5%.

Regardless of the method used, these studies consistently indicate a high prevalence of flat feet among preschool children in Serbia. The results of our study show that children in Leskovac are comparable to other regions of Serbia in terms of flat foot prevalence.

The situation is not significantly different in other parts of the world. Šutvajová et al. (2021) reported a prevalence of 77% in Slovakian children aged 4 to 6 years (PP1–24%, PP2–28%, PP3–25%). Gołębiowska-Sosnowska et al. (2019) reported a prevalence of 67.1% in Łódź (Poland), which is similar to our findings. Lower values were reported by Pfeiffer et al. (2006), who found a prevalence of flexible flat feet of 44% and pathological flat feet of 1% in 835 children aged 3 to 6 years.

Two studies from Indonesia present differing results. Octavius et al. (2020) found a prevalence of 34.2% in children aged 5 to 6 years, while Yulianti, Efendi and Lubis (2023) reported a prevalence of 57% in children aged 4 to 6 years. These differences may be explained by the inclusion of younger children in the latter study, given that prevalence tends to be higher at younger ages.

Studies from India also report similar results to those found in our research. Wangara et al. (2016) reported a prevalence of 60% (right foot) and 63.3% (left foot) in tribal children aged 3 to 5 years. Abolarin et al. (2011) found that 40.7% of 6-year-old children in Nigeria had flat feet. Vergara-Amador et al. (2012) reported a lower prevalence of 30.9% in children aged 3 to 5 years in Colombia.

Comparing boys and girls

Our research showed that there is no statistically significant difference in the prevalence of flat feet between boys and girls. Romanov et al. (2014) obtained the same results and determined that there is no significant difference in the prevalence of flat feet between boys and girls in preschool children in Novi Sad aged 6 to 7 years. Mickle, Steele and Munro (2008) came to different results and found in a sample of pre-school children in Australia (average age 4.2 years) that boys showed statistically significantly flatter feet than girls. Chen, Chung, and Wang (2009) obtained the same results on a sample of children aged 5 to 13 from Taiwan and found that boys had a significantly higher frequency of flat feet than girls. Kapo et al. (2020) found that boys show a higher prevalence of flat feet than girls, by analyzing 17 scientific studies. Ezema, Abaraogu and Okafor (2014) studied 474 children aged 6 to 10 years and found that boys have twice the probability of having flat feet than girls. Pfeiffer et al. (2006) found on a sample of 835 children aged 3 to 6 years that boys have a significantly higher tendency to flat feet than girls: the prevalence of flat feet in boys was 52%, and in girls 36%. Jankowicz-Szymańska and Pociecha (2012) found that boys had lower longitudinal foot arches than girls in a sample of preschoolers from Tarnow (Poland), aged 4 to 6 years. Šutvajová et al. (2021) found that even among Slovak preschool children aged 4 to 6 years, girls are less affected by pes planus than boys in a ratio of 1:1.3. Salinas-Torres et al. (2023) analyzed 12 studies and found that males are more associated with flat feet than females. Sabo (2006) obtains the same results and states that the percentage of flat feet in boys in Vojvodina (25.6%) is statistically significantly higher than in girls (18.4%). A year later, Sabo (2007) states that the same situation was in the cities of Sombor, Sremska Mitrovica, Bačka Palanka. The percentage of flat feet in boys was 57.4%, and in girls, 43.2%. Pavlović (2012) found that the percentage of flat feet in boys aged 6 to 7 years is 16.3% and in girls, 9.7%.

The high frequency of flat feet in children can be explained by the action of several factors. Insufficient physical activity and inadequate footwear can slow down the development of the longitudinal arch of the foot (Kojić et al., 2021), while the weakness of the foot muscles and the disproportion between muscle strength and load lead to changes in the static status of the foot (Đorđević, Jorgić, & Stanojević, 2015). Also, numerous studies indicate a positive association between the body mass index and the occurrence of flat feet, because increased body mass puts additional stress on the structures of the feet (Chen, Chung, & Wang, 2009; Pfeiffer et al., 2006). If such deformities are not recognized and treated in time, they can lead to postural disorders, pain, and reduced functional abilities in later life (Gołębiowska-Sosnowska et al., 2019). Therefore, it is necessary to plan targeted preventive and corrective interventions that include regular physical activity, exercises to strengthen the foot muscles, and proper selection of footwear (Park, Cho, & Chang, 2023). Early recognition and adequate interventions can significantly contribute to the proper development of the foot and reduce the risk of later complications.

Conclusion

It can be concluded that there are no statistically significant differences (p=0.125) between the sexes in the prevalence of flat feet in children of this age group of different sexes. Our research has shown that the prevalence of flat feet among preschool children in Leskovac is high and that they are not lagging behind children from other cities in Serbia, Europe, and the world in this segment. Considering that we

know that the longitudinal arch of the foot in preschool children is formed between the ages of 4 and 6, the data obtained are not a big surprise and are not the danger it seems when we mention that 72% (PP1–30%, PP2–23%, PP3–14% and PP4–5%) of children have flat feet. However, since 57.1% of children at the age of 6 have flat feet, when the foot should already have its natural shape and a formed arch, we can say that as children get older, the longitudinal arch of the foot does not form sufficiently. The obtained results are an alarm for educators to devote more time to organizing physical education games that will encourage the development of the foot muscles and enable the natural development of the longitudinal arch of the foot, which would reduce the percentage of children with flat feet, and thus the eventual consequences of that condition. In addition, we recommend that educators teach children about healthy nutrition through projects in order to reduce the percentage of children with overweight or obese, which can be complicating factors for the natural development of the feet. It is also necessary to educate parents about food hygiene and flat feet. We recommend that every flexible flat foot without symptoms is first treated with physical corrective exercise and a change in lifestyle, so if this does not give results, after consultation with an orthopedist or a doctor, to move on to other means that will help the formation of the longitudinal arch of the foot.

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Conflicts of Interest
The authors declare no conflict of interest.

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