The Use of UCBL Orthosis in Patients with Flatfoot in Foot Clinic, Siriraj Hospital

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Objective: *To study the frequency, results, and concomitant factors of the use of University of California Biomechanics Laboratory (UCBL) orthosis in Foot Clinic, Siriraj Hospital.*
Material and Method: *Study from patient records and interview of the patients' parents (if the patient was younger than 12 years old) or the patients themselves who had flatfeet and received UCBL orthosis from Foot Clinic, Siriraj Hospital, between June 2013 and May 2014 about the latest UCBL orthosis after the first three months of use.*
Results: *Forty-six participants were reviewed, consisting of 22 males (47.8%) and 24 females (52.2%) with median age of 11.5 years. The majority had flexible flatfeet (87.0%). The participants that used the UCBL orthosis for more than three days per week and for 50% or more of daily walking and standing duration was 63%. Using this orthosis reduced foot pain and increased walking stability (p-value = 0.009 and 0.010, respectively). Factors associated with the use of UCBL orthosis were the change of pain level after receiving the UCBL orthosis and fitting and overall satisfaction with the UCBL orthosis.*
Conclusion: *The use of UCBL orthosis from the Foot Clinic, Siriraj Hospital was 63%. Using the UCBL orthosis could reduce foot pain and increase walking stability. Factors associated with the use of UCBL orthosis were the change of pain level after receiving the UCBL orthosis and fitting and overall satisfaction with the UCBL orthosis.*

Keywords: *Use of orthosis, UCBL orthosis, University of California Biomechanics Laboratory orthosis, Flatfoot*

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Pes planus or flatfoot is one of the common foot problems presented in clinical practice[1], and the most common foot problem in children. This type of deformity is defined as low or absent medial longitudinal arch. Most of the patients have eversion of the calcaneus, abduction of the forefoot, and tightening of the Achilles tendon[2-5].

The available prevalence was hugely variable, range from 0.6 to 77.9%, because of the difference of populations, assessment measures, and age groups[6,7]. The prevalence of flatfoot was reduced with age. The prevalence from previous studies, reporting the prevalence of flatfoot in preschool children (range 2 to 6 years) was 37.5 to 97%[4,8-10]. Nevertheless, the prevalence from other studied in children approximating 10 years old (range 8 to 13 years), was only 4 to 19%[3,10-12]. Pes planus appears during the first year of life but persists in only 3% of adult population.

Pes planus or flatfoot can be classified into flexible and rigid deformities. Flexible flatfoot is characterized by a normal arch during non-weight bearing and a flattening of the arch on stance. Otherwise, rigid flatfoot is characterized by a rigid, flattened arch in both weight bearing and non-weight bearing positions[5].

The majority of flexible flatfeet are physiologic and medial longitudinal arch develops in the first 10 years of life. The factors that may increase the susceptibility for physiologic flatfoot include younger age, boy, overweight, hypermobility, and consistently shod from an early age[1]. Some neurologic or muscular disorders such as hypotonic cerebral palsy, muscular dystrophy, Down's syndrome, or Ehler's Danlos can cause flatfoot[1]. The rigid flatfoot usually comes from tarsal coalitions[1]. In adult, the most common acquire flatfoot comes from posterior tibial tendon dysfunction.

Flatfoot rarely causes pain in young children. Children usually present for evaluation because of their parents' concern about the appearance of the feet. Flatfoot can occasionally be painful after extreme exercises or long walks. The pain usually diffuses in

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the medial part of the foot and lower leg.

There are non-surgical and surgical treatments. The goals of the non-surgical treatment are to decrease symptoms, increase function, and prevent further foot deformity. The treatments include advice and education to the patients and their parents, stretching and strengthening exercises, proper footwear selection and many types of foot orthoses. One of the orthoses commonly prescribed for the treatment of flatfoot is UCBL orthosis. UCBL (University of California Biomechanics Laboratory or University of California Berkeley Laboratory) orthosis is a maximum-control foot orthosis that was named after the laboratory where it was researched and developed. It was developed in 1967 at the University of California Biomechanics Laboratory, which is sometimes referred to as the University of California Berkeley Laboratory. The UCBL orthosis is used to stabilize a flexible flatfoot deformity. This orthosis differs from other foot orthoses in which it fully covers the heel with molded heel cup which holds the heel in neutral position. Moreover, the UCBL orthosis also supports the medial longitudinal arch of the foot. This orthosis is commonly used in flexible deformity that foot is flexible enough to be held in a neutral position comfortably. If the foot is rigid, the UCBL is made to the shape of the foot and the goal is to prevent further deformity[13].

The UCBL orthosis is made of a rigid material, usually thermoplastic, molded over a model of the foot created by casting the foot. The foot section of the orthosis usually extends to a line just behind the heads of metatarsal bone. The trim line of the orthosis is below the malleolus, so, the orthosis is not seen outside of the shoe.

Because the UCBL orthosis is made of a rigid material and forces the foot to neutral position, the common complications from using this orthosis are pain, skin redness, and abrasion. These complications can be eliminated by the good fitting of the orthosis.

Articles showed a high rate of non-use of orthosis. It varied from 8% to 75% depending on the patients' problems[14-23]. Wenger DR. study of using corrective shoes and foot orthosis as treatment for flexible flatfoot in children, reported a rate of non-use of 25%[22]. Paecharoen S., study of using custom-made shoes in patients with foot deformities at Foot Clinic, Siriraj Hospital, reported a rate of non-use of 52%[23]. The reasons that the patients did not use their orthosis were, for example, no change or increase in pain, increasing foot deformities, inconvenience, heaviness, embarrassment, and poor cosmetic appearance[24].

Foot Clinic, Siriraj Hospital was established in 2003. There are about 500 patients attending the clinic each year. Most of the patients' problems are diabetic foot and foot deformities. Pes planus is one of the common foot deformities found in the Foot Clinic. The treatments prescribed for these patients are medial arch support, total contact orthosis (TCO), shoe modifications, and UCBL orthosis. About 40 to 60 patients having pes planus received UCBL orthosis from the clinic each year. Moreover, some patients received more than one pair of UCBL orthoses. Since it took professional time and skills to make UCBL orthosis and the cost of them was 120 US$/pair, it would be a big waste if the patients did not use them. As there was no information of the frequency and the result of the use of UCBL orthosis in Foot Clinic, Siriraj Hospital, the present study was performed.

Objective

The purposes of the present study were to explore the frequency and the result of the use of UCBL orthosis in Foot Clinic, Siriraj Hospital. The factors correlated with the use of UCBL orthosis were also explored.

Material and Method

The patients who had flatfeet and received UCBL orthosis from the Foot Clinic, Siriraj Hospital between June 2013 and May 2014 were included.

The inclusion criteria were having unilateral or bilateral flatfoot and receiving UCBL orthosis from the Foot Clinic, Siriraj Hospital. The exclusion criteria were those patients who were unable to contact.

The sample size was determined by using the nQuery Advisor 5.0 program. Based on the related article, the use rate of foot orthosis and custom-made shoes was about 75%[22]. A 12.5% acceptable error had been defined and 95% CI had also been marked out. Forty-six patients were statistically required.

The present study used the 3-part case record form. The first part, the background information, included ages, genders, health benefits, and underlying disease. The second part, the foot information included types and severities of flatfoot and co-deformities. The first part and the second part were collected from patient records. The third part included 11 types of information, uniform shoes required, obtaining physician explanation regarding benefits and complications from using UCBL orthosis, working hours that one needed to stand or walk, days of using UCBL orthosis, levels of foot pain and walking

stability before and after using UCBL orthosis, skin abnormalities such as callus, redness or ulcer before and after receiving UCBL orthosis, other orthosis usage, convenience to put on and remove the UCBL orthosis, and satisfaction with the UCBL orthosis (fitting, comfort, weight, maintenance, and overall satisfaction). Levels of foot pain were recorded by using numeric rating scale. The questions were scored from 0 (no pain) to 10 (worst pain). Levels of walking stability were recorded by using numeric rating scale as well. The questions were scored from 0 (instability) to 10 (very good stability). The convenience to put on and remove the UCBL orthosis and satisfaction with UCBL orthosis were also recorded by using numeric rating scale. The questions were scored from 0 (no convenience/not satisfying) to 10 (very convenient/ very satisfying). The information from the third part was collected from interviewing the patients themselves if they were equal to older than 12 years old. If the patients were younger than 12 years old, their parents were interviewed instead. Finally, the patients and/or their parents were asked for their suggestions how to improve the quality of UCBL orthosis.

In the present study, the data of the UCBL orthosis was collected from the latest orthosis the patients had received from the foot clinic. Moreover, the 3-month period use after receiving the orthosis was collected. To avoid any unreliable information from the patients due to fear of offending, the interviews were performed by the researchers who were not the patients' physicians.

The present study protocol was approved by the Siriraj Institutional Review Board (Si 700/2014) and was supported by the Siriraj Research Development Fund.

Statistical analysis

Statistical analysis was done by using PASW Statistics (SPSS) 18.0 (SPSS Inc., Chicago, IL., USA).

The qualitative data such as gender, health benefit, underlying disease, types and severities of flatfoot, co-deformities, uniform shoes required, obtaining physician explanation regarding benefits and complications from using UCBL orthosis, other orthosis usage, skin abnormalities, and the number of patients who used or did not use UCBL orthosis were reported both in number and percentage. Age, working hours that one needed to stand or walk, levels of foot pain and walking stability before and after receiving UCBL orthosis were calculated in median (range).

Fisher's exact test was used to explore the difference of types of flatfoot, uniform shoes required, obtaining physician explanation regarding benefits and complications from using UCBL orthosis, callus, and ulcer after receiving UCBL orthosis, levels of foot pain and walking stability, and satisfaction on fitting, weight, maintenance and overall satisfaction between user and non-user group. Chi-square test was used to explore the difference of genders, health benefit, underlying diseases, severities of flatfeet, UCBL receiving order, other orthosis usage, skin redness after receiving UCBL orthosis, convenience of putting on and removing the UCBL orthosis, and satisfaction on comfort between user and non-user group. Additionally, Mann-Whitney U test was used to explore the difference of age, working hours that one needed to stand or walk, the difference of levels of foot pain and walking stability between user and non-user. Finally, Wilcoxon signed rank test was used to explore the difference of levels of foot pain and walking stability before and after receiving the UCBL orthosis. A *p*-value of less than 0.05 was considered statistical significant.

Results

Forty-six patients were interviewed. There were 22 males and 24 females with median age of 11.5 years. Expense of about half of them were covered by the government's employee health benefits or universal health insurance (54.3%). The majority needed to use uniform shoes (82.6%). Eleven patients (23.9%) had underlying disease such as Down syndrome and cerebral palsy. Most of the patients had flexible flatfeet (87.0%) with severe degree (52.2%). Seventeen patients had Hallux valgus as co-deformity and seventeen patients had skin abnormalities such as callus before receiving UCBL orthosis. Eighteen patients used other orthosis such as medial arch support, total contact orthosis (TCO) or proper shoes. Nearly all of the patients received physician explanation regarding benefits and complications from using the UCBL orthosis (95.7% and 80.4%), (Table 1).

Regarding the use of the UCBL orthosis, the present study defined the use of UCBL orthosis as using the orthosis more than three days per week and more than or equal to 50% of daily walking and standing duration. Twenty-nine patients (63%) classified as the user group.

The level of foot pain was decreased in the user group. The analysis of the pain measures revealed that there were significant differences between before and after receiving the UCBL orthosis in the user group (*p*-value = 0.009). The median of the different pain level

Table 1. Demographic data (n = 46)

Characteristics	Number (%)
Gender	
Male	22 (47.8)
Female	24 (52.2)
Health benefits	
Covered by government employee benefits	18 (39.1)
Own expenses	15 (32.6)
Universal health insurance coverage	7 (15.2)
Others	6 (13.0)
Underlying diseases	
Yes	11 (23.9)
Type of flatfeet	
Flexible	40 (87.0)
Rigid	6 (13.0)
Severity [a]	
Mild	16 (34.8)
Moderate	6 (13.0)
Severe	24 (52.2)
Co-deformities [b]	
Hallux valgus	17 (37.0)
Others	25 (54.3)
No	14 (30.3)
Skin abnormalities before receiving UCBL orthosis	
Yes	17 (37)
Uniform shoes required	
Yes	38 (82.6)
Obtaining physician explanation regarding benefits from UCBL orthosis	
Yes	44 (95.7)
Obtaining physician explanation regarding complication from UCBL orthosis	
Yes	37 (80.4)
Other orthosis usage [c]	
Yes	18 (39.1)
UCBL from other hospitals	0
Custom-made medial arch support	0
Total contact orthosis (TCO)	4 (22.2)
Custom-made shoes	3 (16.7)
Prefabricated medial arch support	3 (16.7)
Prefabricated insole	1 (5.6)
Proper shoes	10 (55.6)
Others	2 (11.1)

UCBL = University of California Biomechanics Laboratory
[a] If the patient had different severities between right and left feet, the more severe one was chosen.
[b] Some patients had more than one co-deformity.
[c] Some patients used more than one type of orthosis.

recorded by NRS between before and after receiving the UCBL orthosis (calculated by NRS before receiving the orthosis minus NRS after receiving the orthosis, positive value means decreased pain) was 0 (-3, 10). The analysis of the pain measures revealed significant differences between the two groups (p-value = 0.030), (Table 2).

The level of walking stability was increased in both groups. The analysis of the walking stability showed significant difference between before and after receiving the UCBL orthosis in both groups (p-value = 0.010 and 0.041). The median of the difference of the walking stability level recorded by NRS between before and after receiving the UCBL orthosis (calculated by NRS before receiving the orthosis minus NRS after receiving the orthosis, minus value means increased stability) was 0 (-7, 10). However, the analysis of the walking stability measures showed no significant differences between the two groups (p-value = 0.685), (Table 2).

Using Univariate Analysis, the factors associated with the use of the UCBL orthosis were change of pain level after receiving the UCBL orthosis, satisfaction with the UCBL orthosis on fitting, and overall satisfaction (p-value <0.05), (Table 3).

Regarding the reasons of the UCBL orthosis rejection in the non-user group, the most reason was pain with or without skin redness or ulcer (10 patients). Other reasons were the inconvenience of putting on and taking off (2 patients), and feeling annoyance (1 patient), (Table 4).

Regarding the suggestions for improving the quality of the UCBL orthosis, seventeen patients, nine patients in the user group and eight patients in the non-user group, suggested to improve the fitting. Eight patients, five patients in the user group and three patients in the non-user group, suggested to put the orthosis fixed to the shoes. Six patients, five patients in the user group and one patient in the non-user group, suggested to improve cosmetic appearance (color, style, and neatness). Three patients in the user group suggested to decrease orthosis-making and orthosis-finishing time. Furthermore, two patients, one patient in each group, suggested to reduce the price.

Discussion

The main purpose of the present study was to find the frequency of the use of UCBL orthosis in the Foot Clinic, Siriraj Hospital. Regarding the definition of the use of UCBL orthosis, there was no literature specifying the suitable time for the use of orthosis. In addition, each patient had different daily activities, walking and standing duration period. Thus, the

Table 2. Levels of foot pain and walking stability before receiving the UCBL orthosis and after receiving the UCBL orthosis

	User (n = 29) median (min-max)	Non-user (n = 17) median (min-max)	*p*-value
Levels of foot pain			
Before receiving UCBL orthosis	0 (0 to 10)	0 (0 to 9)	0.152
After receiving UCBL orthosis	0 (0 to 5)	3 (0 to 9)	0.421
p-value	0.009**	0.533	
Differences of pain levels[a]	0 (-3 to 10)	0 (-9 to 8)	0.030*
Levels of walking stability			
Before receiving UCBL orthosis	10 (2 to 10)	9 (0 to 10)	0.522
After receiving UCBL orthosis	10 (7 to 10)	10 (4 to 10)	0.801
p-value	0.010**	0.041**	
Differences of stability levels[b]	0 (-7 to 3)	0 (-10 to 1)	0.685

Levels of foot pain and walking stability were recorded by numeric rating scale

[a] Calculated by score before receiving the UCBL orthosis minus score after receiving the UCBL orthosis (positive value means the patients had less pain after receiving the UCBL orthosis)

[b] Calculated by score before receiving the UCBL orthosis minus score after receiving the UCBL orthosis (minus value means the patients had better walking stability after receiving the UCBL orthosis)

* Statistically significant for the comparison between the user group and nonuser group, using Mann-Whitney U test

** Statistically significant for the comparison between before and after receiving UCBL orthosis, using Wilcoxon signed ranks test

present study defined the use of UCBL orthosis as when the patients had to use the orthosis more than three days per week and 50% or more of the daily walking and standing period. The author expected that the patients should have been outdoor, so they need to stand or walk for a long period of time.

Regarding to the use of UCBL orthosis, the present study showed the use of the UCBL orthosis was at 63%. In addition, other studies found the use of foot orthosis at 8 to 75% depending on the group of patient samples, type of orthosis and the definition of orthosis-using used in each study[14-23]. When comparing with the most similar study, Wenger DR did study of using corrective shoes and foot orthosis as treatment for flexible flatfoot in children, reported the rate of using was 75%[22]. The present study presented a lower rate of use. The explanation may be that Wenger DR studied the use of many types of foot orthosis. Some types of orthosis restrict less the feet and are easier to use than the UCBL orthosis. When comparing with the other study, Paecharoen S did study of using custom-made shoes in patients with foot deformities at the Foot Clinic, Siriraj Hospital, reported the rate of use was 47.8%. The present study revealed a higher rate of use. The explanation may be the UCBL orthosis can insert in any patients' shoes. The patients did not need to use only one pair of their custom-made shoes to control their foot deformities.

As the result in using the UCBL orthosis, it turned out that the level of walking stability was increased in both groups. Maybe using of the UCBL orthosis could control the position of subtalar joint from valgus deformity to nearly normal position right after using the orthosis, effected in increasing the level of walking stability. In the other hand, the present study showed the level of foot pain was decreased only in the user group. Maybe the reason was the UCBL orthosis can decrease foot pain after using for adequate time. If the patients had complications such as pain, skin redness or ulcer from using UCBL orthosis, they rejected it. These reasons were the same as the UCBL orthosis rejection in the non-user group.

Regarding to the factors associated with the use of UCBL orthosis, the result of the present study revealed the factors linked to the use of the orthosis when using Univariate analysis were the change of pain level after receiving the UCBL orthosis and the satisfaction with the UCBL orthosis on fitting and overall satisfaction. These data discovered that the good satisfaction on fitting resulted in pain reduction, good compliance, and good result of treatment.

Limitation

Because the main purpose of the present study was to find the frequency of the use of UCBL orthosis, the sample size was calculated for that main

Table 3. Univariate Analysis of demographic data, differences of pain levels, differences of stability levels, convenience of putting on/taking off and satisfaction with UCBL orthosis

	User Number (%) (n = 29)	Nonuser Number (%) (n = 17)	*p*-value
Age, median (min, max)	11 (2, 62)	13 (5, 59)	0.386[e]
Gender			
Female	16 (55.2)	8 (47.1)	0.595[c]
Health benefits			
Not own expenses	20 (69.0)	11 (64.7)	0.799[c]
Own expenses	9 (31.0)	6 (35.3)	
Underlying diseases			
Yes	6 (20.7)	5 (29.4)	0.503[c]
Daily standing and walking hours median (min, max)	4 (2, 12)	4 (2,10)	0.954[e]
Type of flatfeet			
Flexible	23 (79.3)	17 (100)	0.071[d]
Severity			
Mild	12 (41.4)	4 (23.5)	0.401[c]
Moderate	4 (13.8)	2 (11.8)	
Severe	13 (44.8)	11 (64.7)	
Uniform shoes required			
Yes	24 (82.8)	14 (82.4)	1.000[d]
Obtaining physician explanation regarding benefits from using UCBL orthosis			
Yes	29 (100)	15 (88.2)	0.131[d]
Obtaining physician explanation regarding complication from UCBL orthosis			
Yes	23 (79.3)	14 (82.4)	1.000[d]
UCBL receiving order			
1st	16 (55.2)	14 (82.4)	0.062[c]
Other orthosis usage			
Yes	10 (34.5)	8 (47.1)	0.399[c]
Skin abnormalities after receiving UCBL orthosis			
Callus	9 (31.0)	2 (11.8)	0.172[d]
Skin redness	11 (37.9)	9 (52.9)	0.322[c]
Ulcer	1 (3.4)	1 (1.8)	0.545[d]
Differences of pain levels (NRS)			
≥ 0[a]	27 (93.1)	10 (58.8)	0.008[d]
Differences of stability levels (NRS)			
≤ 0[b]	27 (93.1)	16 (94.1)	1[d]
Convenience of putting on/ taking off (NRS)			
≥ 7	22 (75.9)	9 (52.9)	0.109[c]
Satisfaction with UCBL orthosis (NRS ≥ 7)			
Fitting	27 (93.1)	7 (41.2)	0.001[d]
Comfort	20 (71.4)	8 (47.1)	0.102[c]
Weight	26 (92.9)	12 (70.6)	0.086[d]
Maintenance	29 (100)	15 (88.2)	0.131[d]
Overall	28 (96.6)	8 (47.1)	<0.001[d]

NRS = numeric rating scale

[a] Calculated by score before receiving the UCBL orthosis minus score after receiving the UCBL orthosis (score ≥ 0 means the patients had equal or less pain after receiving the UCBL orthosis)

[b] Calculated by score before receiving the UCBL orthosis minus score after receiving the UCBL orthosis (score ≤ 0 means the patients had equal or better walking stability after receiving the UCBL orthosis)

[c] Using Chi-square test, [d] Fisher's exact test, [e] Mann-Whitney-U test

Table 4. Reasons of UCBL orthosis rejection in nonuser group (n = 17)

	Number (%)
Pain/skin redness/ulcer	10 (58.8)
Inconvenience of putting on/taking off	2 (11.8)
Annoy	1 (5.9)
Embarrass	0
Others	4 (23.5)

objective. However, the sample size was too small to discover the factors associated with the use of orthosis by using Multiple Logistic Regression Analysis. Therefore, the present study can report only the factors linked to the use of the orthosis when using Univariate Analysis.

Conclusion

The use of UCBL orthosis from the Foot Clinic, Siriraj Hospital was 63%. Using the UCBL orthosis could reduce foot pain. Factors associated with the use of UCBL orthosis were the decreasing of pain level after receiving the UCBL orthosis and the satisfaction with the UCBL orthosis on fitting and overall satisfaction.

What is already known on this topic?

The rate of non-use of orthosis was high. It varied from 8% to 75% depending on the patients' problems. The reasons that the patients did not use their orthosis were, for example, no change or increase in pain, increasing foot deformities, inconvenience of putting them on and removing them, heaviness, and poor cosmetic appearance.

What this study adds?

The use of UCBL orthosis in the Foot Clinic, Siriraj Hospital was 63%. Using the UCBL orthosis could reduce foot pain and increase walking stability. Factors associated with the use of UCBL orthosis were the change of pain level after receiving the UCBL orthosis and the satisfaction with the UCBL orthosis on fitting and overall satisfaction. The satisfaction on good fitting resulted in pain reduction and lead to the good compliance and the good result of treatment.

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Potential conflicts of interest

None.

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การใช้อุปกรณ์เสริมยูซีบีแอลในผู้ป่วยเท้าแบนที่คลินิกสุขภาพเท้า โรงพยาบาลศิริราช

วรธีร์ เดชารักษ์, นวพร ชัชวาลพาณิชย์

วัตถุประสงค์: *เพื่อศึกษาอัตราการใช้อุปกรณ์เสริมยูซีบีแอล ผลของการใช้อุปกรณ์และปัจจัยที่มีผลต่อการใช้ในคลินิกสุขภาพเท้า โรงพยาบาลศิริราช*

วัสดุและวิธีการ: *ศึกษาข้อมูลจากเวชระเบียนและสัมภาษณ์ผู้ป่วย (หรือผู้ปกครองหากผู้ป่วยอายุน้อยกว่า 12 ปี) ที่เท้าแบนและได้รับอุปกรณ์เสริมยูซีบีแอลที่คลินิกสุขภาพเท้า โรงพยาบาลศิริราช ในช่วงเดือนมิถุนายน พ.ศ. 2556 ถึง เดือนพฤษภาคม พ.ศ. 2557 เกี่ยวกับอุปกรณ์ที่ได้รับจากคลินิกครั้งล่าสุด และข้อมูลของการใช้อุปกรณ์ในช่วง 3 เดือนแรกหลังจากได้รับอุปกรณ์*

ผลการศึกษา: *ผู้เข้าร่วมวิจัย 46 คน ค่ากลางอายุ 11.5 ปี เป็นชาย 22 คน (ร้อยละ 47.8) หญิง 24 คน (ร้อยละ 52.2) ส่วนใหญ่มีเท้าแบนแบบยืดหยุ่น (ร้อยละ 87) ผู้เข้าร่วมวิจัยมีการใช้อุปกรณ์เสริมยูซีบีแอล (ใส่อุปกรณ์มากกว่า 3 วันต่อสัปดาห์ และระยะเวลาในการใช้อุปกรณ์ต่อวันมากกว่าหรือเท่ากับ 50% ของระยะเวลาในการยืนและเดินต่อวัน) จำนวน 29 คน (ร้อยละ 63) เมื่อเปรียบเทียบระหว่างกลุ่มที่ใช้อุปกรณ์กับกลุ่มที่ไม่ใช้ พบว่ากลุ่มที่ใช้อุปกรณ์มีอาการเจ็บเท้าลดลงและมีความมั่นคงในการเดินเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติ (p-value = 0.009 และ 0.010 ตามลำดับ) ปัจจัยที่มีผลต่อการใช้อุปกรณ์ได้แก่ อาการเจ็บเท้าที่ลดลง มีความพึงพอใจในความกระชับของอุปกรณ์และมีความพึงพอใจในภาพรวมของอุปกรณ์*

สรุป: *การใช้อุปกรณ์เสริมยูซีบีแอลในคลินิกสุขภาพเท้า โรงพยาบาลศิริราช เท่ากับร้อยละ 63 การใช้อุปกรณ์ช่วยลดอาการเจ็บเท้าและเพิ่มความมั่นคงในการเดิน ปัจจัยที่มีผลต่อการใช้อุปกรณ์ได้แก่ อาการเจ็บเท้าที่ลดลง มีความพึงพอใจในความกระชับของอุปกรณ์และมีความพึงพอใจในภาพรวมของอุปกรณ์*