



Service Priorities and Programmes
Electronic Presentations

Convention ID: 946

Submitting author: Ms Miko LAO

Post title: Other(Please specify):, TMH, NTWC

New Technology in Physiotherapy Flat Foot Programme – the Use of Pedography and its Clinical Application

Lao LM, Chan NC, Lai HY, Lam HM, Tung LH

Department of Physiotherapy, Tuen Mun Hospital

Keywords:

Flat Foot Programme

Pedography

Introduction

Flat foot refers to the collapse of medial foot arch in weight-bearing position. It might induce pain and discomfort not only on foot but also all lower limbs joints and spine due to the uneven pressure distribution and altered lower limb biomechanics. Previously in our Flat Foot Programme, we assessed the flat foot with Foot Arch Index which was measured by static footprint. However, the dynamic loading during walking was rarely reported. Pedography is an advanced tool that enables measurement of pressure distribution over the foot during walking. This shows advantage over static footprint measure due to its capabilities of detecting pressure points in different time of gait cycle. With this information, the area upon where high pressure act and deformities can be determined which can supplement and extend standard clinical assessment of flat feet.

Objectives

To document the dynamic foot geometry and loading in patients with flat feet by using a pedography system

Methodology

Nineteen subjects clinically diagnosed with flat feet (mean age = 8.7 ± 2.8 years old) were recruited in this study. Dynamic measurements of hallux angle, arch index, peak pressure of hindfoot, peak pressure of midfoot, peak pressure of forefoot and peak pressure of big toe were acquired. Two-step approach was used as it was relatively easier for subject to step within the platform of the pedography system and yielded similar results as the gold-standard of mid-gait method. All measurements were calculated for each subject as the mean of five trials.

Result

Thirty-eight feet of nineteen children were measured and analyzed. Hallux angles (mean = 8.7 ± 4.9 degrees) of all children fell into normal range of less than 15 degrees. A trend was observed that the peak pressure in forefoot was increasing with increased arch index. Among thirty-eight feet, eight feet were shown to have normal arch index (mean = 0.26 ± 0.02) and the maximum loading in these children was found in the hindfoot (mean peak pressure = 255.1 ± 77.5 kPa). Arch index of eleven feet were ranged from 0.29 to 0.35 (mean = 0.34 ± 0.02). The maximum loading of them

happened in forefoot (mean peak pressure 261.0 ± 169.7 kPa). The arch index greater than 0.35 was found in nineteen feet (mean = 0.38 ± 0.02). They had maximum loading in big toe (mean peak pressure = 291.0 ± 138.8 kPa).

A portion of subjects with clinically diagnosed flat foot showed normal arch index during gait which indicated the foot arch not as flat as that in standing during observation. This provided further information on the severity of the condition so that appropriate treatment plan could be executed. The pedography system might provide accurate and reliable data that allows progress documentation and provides treatment indications.