

## The Clinical Effectiveness of Off-The-Shelf Foot Orthoses on the Dynamics of Gait in Patients with Early Rheumatoid Arthritis

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**Abstract :** Background: Rheumatoid Arthritis (RA) typically effects the feet and about 20% of patients present initially with foot and ankle symptoms. Custom moulded foot orthoses (FO) in the management of foot and ankle problems in RA is well documented in the literature. Off-the-shelf FO are thought to provide an effective alternative to custom moulded FO in patients with RA, however they are not evidence based. Objectives: To determine the effects of off-the-shelf FO on; 1. quality of life (QOL) 2. walking speed 4. peak plantar pressure in the forefoot (PPPft) Methods: Thirty-five patients (six male and 29 female) participated in the study from 11/2006 to 07/2008. The age of the patients ranged from 26 to 80 years (mean 52.4 years; standard deviation [SD] 13.3 years). A repeated measures design was used, with patients presenting at baseline, three months and six months. Patients were tested walking barefoot, shod and shod with FO. The type of orthoses used was the Slimflex Plastic ® (Algeos). The Leeds Foot Impact Scale (LFIS) was used to investigate QOL. The Vicon 612 motion analysis system was used to determine the effect of FO on walking speed. The F-scan walkway and in-shoe systems provided information of the effect on PPPft. Ethical approval was obtained on 07/2006. Data was analysed using SPSS version 15.0. Results/Discussion: The LFIS data was analysed with a repeated measures ANOVA. There was a significant improvement in the LFIS score with the use of the FO over the six months ( $p < 0.01$ ). A significant increase in walking speed with the orthoses was observed ( $p < 0.01$ ). Peak plantar pressure in the forefoot was reduced with the FO, as shown by a non-parametric Friedman's test (chi-square = 55.314,  $df=2$ ,  $p < 0.05$ ). Conclusion: The results show that off-the-shelf FO are effective in managing foot problems in patients with RA. Patients reported an improved QOL with the orthoses, and further objective measurements were quantified to provide a rationale for this change. Patients demonstrated an increased walking speed, which has been shown to be associated with reduced pain. The FO decreased PPPft which have been reported as a site of pain and ulceration in patients with RA. Salient Clinical Points: Off-the-shelf FO offer an effective alternative to custom moulded FO, and can be dispensed at the chair side. This is crucial in the management of foot problems associated with RA as early intervention is advocated due to the chronic and progressive nature of the disease.

**Keywords :** podiatry, rheumatoid arthritis, foot orthoses, gait analysis

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020