

The use of a silicone boot orthosis on the speed and effort in walking in patients with lower motor neuron lesions.

Wright P A (1), Morant S (1), Watts R (2), Swain I D (1)

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(1) Department of Medical Physics and Biomedical Engineering Salisbury District Hospital, Salisbury, WILTS, SP2 8BJ.

(2) Dorset Orthopaedic, Headland Park Industrial Estate, Ringwood, HANTS.

ABSTRACT

Dorset Orthopaedic designed a silicone boot orthosis to maintain dorsiflexion of the foot during the swing phase of gait. These orthoses are custom made for each subject by casting the foot and ankle in a position of slight dorsiflexion. The orthosis is put on like a sock and is held in place by Velcro fastening over the Achilles tendon.

Twelve subjects with lower motor neuron lesions were fitted with the orthosis. Walking speed and Physiological Cost Index (PCI, effort of walking) were then individually measured and then analysed using Wilcoxon signed ranks test, this was carried out initially and after six months use. All patients also completed a written questionnaire.

Comparison with and without the orthosis at the initial assessment showed the orthosis increased the walking speed by 10% ($p < 0.01$) and reduced the PCI by 2%. Comparison of walking speed and PCI at the six month assessment with the orthosis compared to the initial assessment without showed an increase in speed of 20% ($p < 0.02$) and a reduction in PCI of 32% ($p = 0.02$).

The questionnaire showed the majority of the patients found the orthosis comfortable and they all found it useful. Five said they wore it all the time, four most of the time and the remaining three wore theirs sometimes. Six patients commented that they could walk further when wearing it. The orthosis also has advantages over existing orthoses in that it can be worn without shoes, fit into normal footwear and its inherent flexibility ensures that it can provide support and stability without restricting the active movement.