Prosthetics and Orthotics International, 1985, 9, 115-116

Technical note

Three point dynamic orthosis

D. D. CHALMERS and G. P. HAMER

Orthotic Department, Royal Alexandra Hospital for Children, Sydney

Abstract

The present method of static three point bracing is unsatisfactory. The static type orthosis becomes ineffectual in reducing flexion deformities in upper and lower extremities and requires constant adjustment as the contractures are reduced.

A three point dynamic orthosis using a flexible rod construction has been designed to contain and reduce flexion deformities. This orthosis has certain advantages over the static type and has been used successfully in children with contractures due to cerebral palsy and burns.

Method

The three point dynamic orthosis (Fig. 1) consists of two bands connected together by fibreglass rods which have connecting lugs on each end. The rods have a heatshrink plastic applied to them as a protective and cosmetic covering. The bands are connected to the rods by a single rivet through the connecting lugs at each end of the rods allowing the bands to swivel. A spreader bar is fitted behind the knee centre.

A knee/elbow pad is then fitted over the knee/elbow to apply the opposing pressure in the three point pressure system.

When fitting the orthosis to patients with severe contractures care must be taken not to apply too much pressure so as to cause pain to the patient.

The three point dynamic orthosis permits the patient to flex the limb by contracting the muscles sufficiently to overcome the stiffness of the orthosis. When the voluntary contractions cease the orthosis will continue to apply pressure until the limb has returned to the fully extended

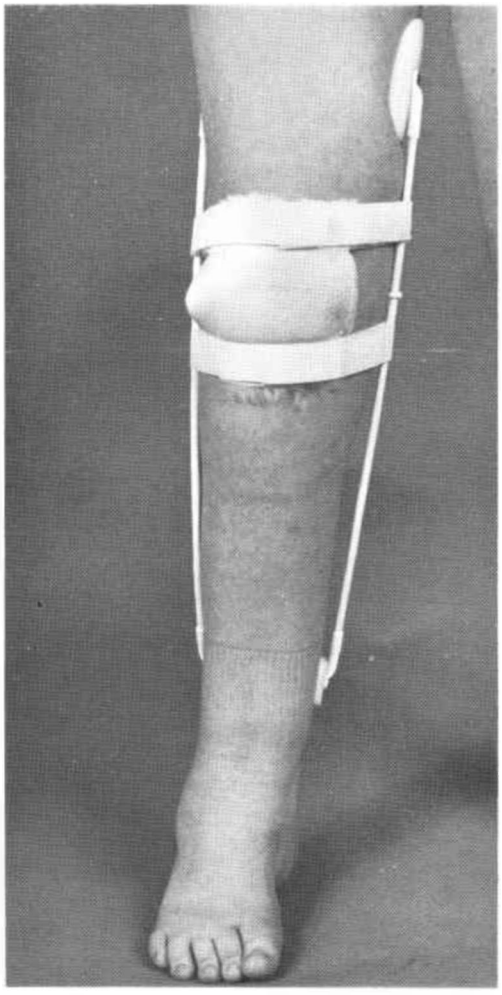

Fig. 1. The dynamic orthosis fitted to a cerebral palsy patient.

All correspondence to be addressed to Mr. D. D. Chalmers, Chief Orthotist, Department of Orthotics, Royal Alexandra Hospital for Children, Pyrmont Bridge Road, Camperdown, Sydney, Australia.

position. This also applies during involuntary contractions. The orthosis will not push the limb into hyperextension.

Results

The orthosis has been used successfully on 90 patients with severe burns to the upper and/or lower extremities and cerebral palsy patients with spasm contractures. It may also be used in the treatment of genu varum and genu valgus, instead of a plaster or metal backslab, being much lighter, cooler and washable, an important characteristic when fitted to children.

FURTHER READING

HILL, J. T., FENWICK, A. L. (1968) A fibreglass-epoxy drop-foot splint. *Orthot. Prosthet.* **22(3),** 1-8.

STAROS, A., LEBLANC, M (1975) Orthotic components and systems. In: American Academy of Orthopaedic Surgeons. Atlas of orthotics: biomechanical principles and application. St Louis, MO: C. V. Mosby, 184-234.