

Technical Note:

Shoeing the Deformed Foot: A Method For Fabricating Molded Sandals

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Custom-molded footwear is essential for the weight-bearing comfort of patients with severe, non-operable foot deformities. Such footwear, however, is expensive and time-consuming to make and equipment for its construction is not available in the standard orthotics laboratory. The need for durable, easily fabricated molded footwear for the large number of veterans with post-traumatic and degenerative foot deformities prompted us at the Veterans Administration Hospital in Nashville, Tennessee, to develop a molded sandal which can be readily fabricated in any orthotics laboratory.

Using commercially available foam foot impression blocks (Foam-art), a negative mold of the plantar surface of the foot is made. This is done with the patient partial weight-bearing to allow nearly full spreading of the forefoot and partial flattening of the longitudinal arch. The toes are manually pressed into the foam to assure that the full length of the foot has been impressed. A positive plaster mold is then cast. Modifications of the positive cast include (1) extending the toe-plate approximately one-half inch to insure that the toes do not extend beyond the anterior edge of the sandal, (2) filling in the toe sulcus, (3) leveling the weight-bearing areas of the heel and ball to the same plane and (4) constructing reliefs for any plantar protuberances.

A Pelite and thermal cork insole is then formed on the positive mold using a vacuum apparatus. The Pelite interfaces with

the foot. Pelite is used rather than leather for the foot contact surface because it is more washable, more durable, adheres better to the cork mid-sole and is easier to form.

Successive thicknesses of thermal cork adhered with Master Cement are applied to build up the sole and fill in the area under the longitudinal arch. The plantar surface and sides of the insoles are ground flat and the edges trimmed almost flush with the Pelite insole. Layered smooth crepe can be used to construct a rocker bottom. Crinkly crepe provides a non-skid cushiony sole. Heavy-weight elkhide makes strong but flexible straps. Strap design is accommodated to the foot deformity. Double transverse straps over the metatarsals are comfortable and easy to don (Fig. 1). Fastenings of one-inch Velcro®, lapped back on itself through a keeper ring, allows easy strap release for arthritic patients with little use

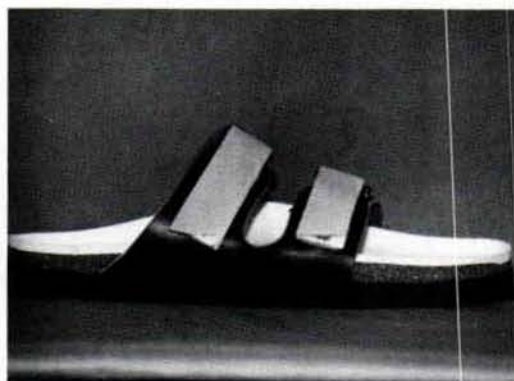


Fig. 1



Fig. 2

of their hands and allows the fastenings to be fully opened to accommodate severely deformed feet (Fig. 2).

The completed sandal is comparatively light-weight. The total time required for fabrication is less than six hours. This sandal has been used successfully during the past two years on patients with rheumatoid arthritis, severe subluxation of the

metatarsal heads, degenerative arthritis, painful callosities and hallux valgus. All of these patients have worn their sandals for more than two months and report them to be comfortable during weight-bearing for extended periods.

It is hoped that this work in the development of simple molded footwear will give impetus to further effort in this area.

ACKNOWLEDGMENTS

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