

Fabrication of the Stuttle Spinal Orthosis

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In 1962, Dr. Fred Stuttle presented to the American Academy of Orthopaedic Surgeons a new concept of flexion-type spinal orthoses, utilizing the true Williams pattern of back bracing, but reversing the thoracic and pelvic band and placing the pelvic area where pressure is more easily tolerated, and less pressure in the lower thoracic area where there is very little natural body padding and where even slight pressure is difficult to accept. (Refer to the preceding article by Campbell.)

Dr. Paul Campbell of the Portland Orthopedic Clinic was favorably impressed with Dr. Stuttle's presentation, and upon his return to Portland from the Academy meeting took immediate steps to make this orthosis available for trial.

A working model of the Stuttle orthosis was obtained from Plattner

Orthopedic Appliance Company of Peoria, Illinois, the facility which makes Dr. Stuttle's orthoses.

Since 1962 the Portland Orthopedic Clinic's Orthotic Facility has produced several hundred of these orthoses with great satisfaction to the patient, gratifying results to the orthopedic surgeon, and few problems to the orthotist.

MATERIAL

The basic metal used is 20-24-T4 aluminum. The pelvic and thoracic bands are cut from sheet stock .080 thick. The two lateral uprights which extend from the end of the pelvic band upward to within half the width of the thoracic band are one-eighth inch by three-fourths inch 20-24-T4 aluminum bar. The two posterior uprights are attached to the lateral uprights three inches from where the lateral uprights are attached to the pelvic band.

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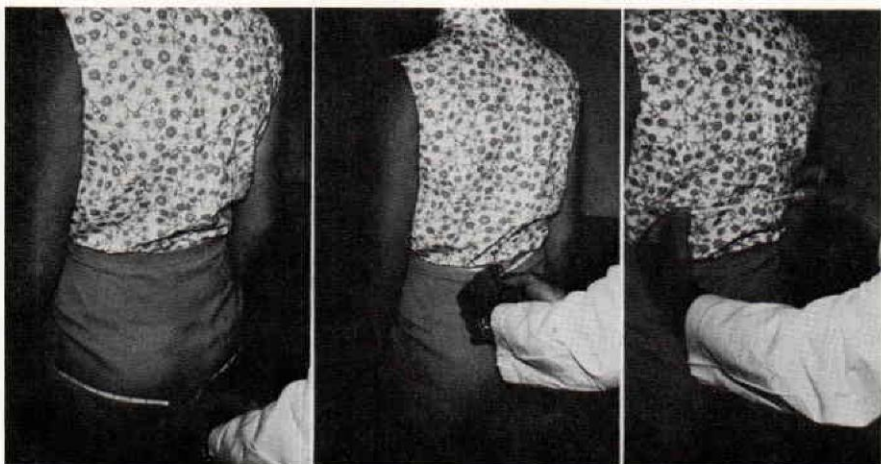


Figure 1

Measurements Required for Fabrication of the Stuttle orthosis.

FABRICATION PROCEDURES

Procedures for fabrication of Stuttle orthosis are given below.

Measurements needed are:

1. Circumference around hips at the level of the greater trochanters (Fig. 1, left).
2. Circumference around waist just above crest of ilium (Fig. 1, center).

3. Length of thoracic band—this band should be only long enough to bear pressure on the flat surface of the back. It should not extend around the rib cage (Fig. 1, right).

The pelvic band (Fig. 2, left) as a rule will vary in length between twenty inches for a very large person to sixteen or seventeen inches for smaller individuals. The length of the

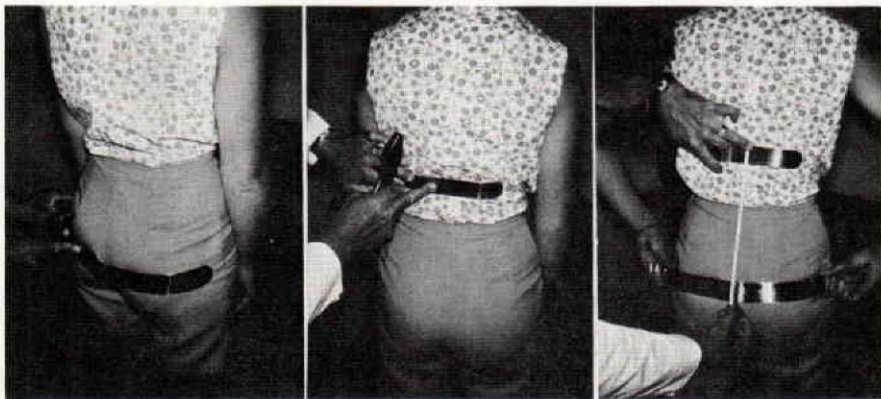


Figure 2

Left, the pelvic band; center, the thoracic band; right, determination of the length of the orthosis.

pelvic band is easily determined. It extends around the hips at the greater trochanter level, but must not touch or exert any pressure on the greater trochanters. Straps, of course, do extend around and over the area of the greater trochanters without any problems, but the pelvic band must not exert any pressure on the greater trochanters.

The thoracic band (Fig. 2, center) is never longer than 11 in., the average being between 9 and 10 in. Iron wagon head rivets $3/16$ in. dia. are used to fasten the joints, one rivet at each joint, in such a manner as to provide free motion.

Length of the orthosis is determined by measuring from the lower side of the pelvic band to the upper side of the thoracic band. The thoracic bands should always extend to the T11 level and should, if possible, extend to a point between the T9 and T10 levels (Fig. 2, right).

It is important to note that the lateral uprights are attached only to the pelvic band, allowing the top of the upright to swing free. Heat is needed to bend the posterior uprights away from the lateral uprights and the 45° bend to place the posterior uprights on an upward plane to be attached two and one-half inches from each end of the thoracic band (Fig. 3).

Holes for straps and "D" rings are placed at each end of the pelvic and thoracic bands and at the upper end of the lateral uprights.

Heavy leather straps are attached at the pelvic band, extending forward, just behind the point of attachment of the lateral upright.

Another heavy strap is attached at the top of the lateral uprights ex-

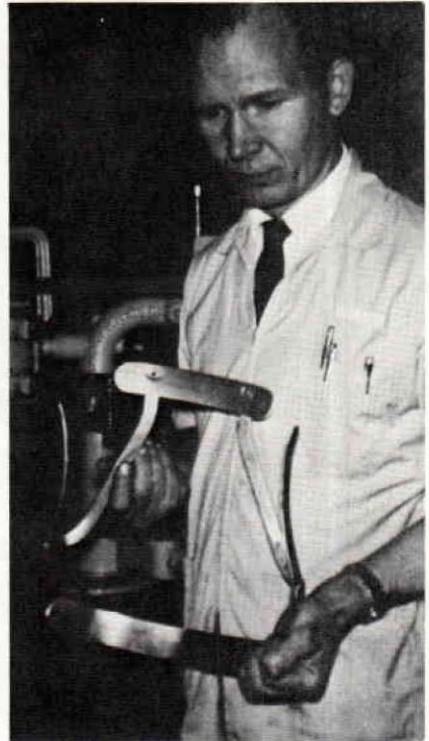


Figure 3

View of the Stuttle orthosis during fabrication to show configuration of the uprights.

tending back towards the end of the thoracic band where "D" rings are placed. The strap is threaded through the "D" rings and then brought around to the front where the top straps and the lower straps are attached to a heavy leather apron by four buckles placed in a manner that makes attachment easy. Average dimensions for the leather apron are $9 \times 4\frac{1}{2}$ in., and the buckles are placed more or less at each corner.

All that remains is covering, padding, and fabrication of the elastic apron. We all know it helps to have a nicely finished orthosis. It is some-

length of one side of your
apron. $7\frac{1}{2}$ "

Now, do the same for the waist.

It being an uneven number,
subtract one inch 28 "

Subtract 6 "

Divide by 4" $\underline{22}$ "

$5\frac{1}{2}$ "

So your apron would consist of
two pieces of Swiss weave elastic:

$5\frac{1}{2}$ " at the top

$7\frac{1}{2}$ " at the bottom

An eight inch detachable zipper
is sewn to one end of each piece
and each piece is sewn to the flap on
the lateral uprights. The complete
orthosis is shown in Figure 4.

Once a general knowledge of this
construction of the Stuttle orthosis
has been acquired, much satisfac-
tion can be gained by the orthotist.
It is our hope that you will find this
orthosis as gratifying to produce as
we have at the Portland Orthopedic
Clinic's Orthotic Department.