Incoordination is a frequent problem for persons with multiple sclerosis (1). As the disease progresses through periods of remission and relapse, patients experience increased difficulty in controlling arm movements while maintaining good posture (2, 3). The principle of compensation for problems of incoordination is to provide postural stability (4, 5). When resistance is applied for stabilization, the patient must increase the effort needed to complete the task. This increased effort results in spreading the movement to the extraneous muscles on both the ipsilateral and contralateral sides (3). This incoordination influences the independent performance of daily functional activities. Either the patient must learn an alternate method of performing the activity or use adaptive equipment designed to help him or her complete the task.

Trombly (4) suggests adding a weight to the distal segment of the impaired extremity to decrease the tremors that cause this incoordination. A weight cuff worn on the wrist is preferable to a weighted utensil because the amount of weight can be controlled and modified as tremors increase or decrease. The cuff also allows hand movements that aid daily living skills.

Most weight cuffs are designed to apply weight to the dorsal surface, but this type of design can place unwanted additional stress on the wrist. Alternatively, a cuff that provides support to the volar surface and applies weight elongated over the dorsal area is described here. The cuff (see Figures 1 and 2) provides support and stability while preventing weakening of the wrist flexors.

**Construction**

**Materials**

The weighted cuff is made using 3.75 cm (1.5 in.) of polyform, some heavy cloth material (i.e., tight-weave cotton flannel), Velcro closures, no. 6 chilled lead shot, thread, and a sewing machine.

**Procedure**

Measure polyform length from the patient’s palmar crease to one-third the length of forearm. Mold to 30° wrist extension.

To determine the size of the base material, measure the patient’s hand across the metacarpophalangeal (MP) joints and around the wrist, allowing enough extra material for the lead shot (see Figure 3). Cut away the material at the base of the thumb to allow movement. Cut another piece of material to make a removable pocket for the polyform (leave one end open). Attach this piece to the volar surface.
surface of the base material just below the palmar crease.

Determine the amount of weight needed to decrease the tremors. Measure the dorsal surface of the MP joints to one-half the length of the forearm. Sew two pieces of the remaining material together, allowing enough room to fill with lead shot, add shot, and sew closed.

Sew the weight to the dorsal surface of the base material just below the MP joints, making sure it is secure.

Summary

These weighted cuffs have been used successfully by three multiple sclerosis patients to decrease upper extremity tremors and thus facilitate independent fine coordination activity. We have also used the cuffs with a brain-injured patient to decrease tremors and increase proprioception. With all these patients, working fasteners during dressing and eating were easier tasks when the cuffs were worn.

REFERENCES