

Hand Rehabilitation Section Clinical Pearls

Topic: Tricks of the Trade: An orthosis fabrication workshop - static elbow orthosis (EO)

Intimidated by the request to fabricate a (decent-looking) custom, static elbow orthosis (EO)? Here are step-by-step instructions for the task.

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Step 1 (photo 1): Choose a thermoplastic material with high memory (maximum resistance to stretch), moderate drape and a long working time. Thickness should be 1/8 inch. Cut one piece long enough to span at least 2/3 of the upper arm and lower arm and 2 smaller pieces for the reinforcement bars.

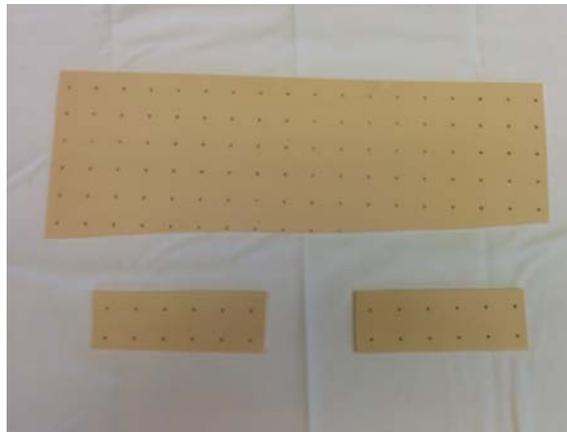


Photo 1

Step 2 (photo 2): Round the edges and narrow the width at the end to be fitted to the forearm. Pinch in the sides for the reinforcement bars.



Photo 2

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Step 3 (photo 3): Mold to the arm using ace wraps as your second set of hands to hold the orthosis in place. Do not include the portion of the EO at the elbow in your ace wrap.



Photo 3

Step 4 (photo 4 and 5): Pull the edges of the thermoplastic at the elbow joint around and pull away from the epicondyles.



Photo 4



Photo 5

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Step 5 (photo 6): Once the thermoplastic cools, remove and attach the reinforcement bars. De-bonding and heating the material to attach will help better secure the bars. Forming the bars so that they are curved will help increase the strength of the bars.



Photo 6

Step 6 (Photo 7-9) Attach Velcro for the forearm and upper arm.



Photo 7

Cut a piece of Velcro for the cubital fossa and place a piece of hook (adhesive hook folded onto itself to make it double sided) in the center of the strap on the loop side (photo 8).



Photo 8

On the smooth side of the Velcro strap, place mole skin for a soft surface against the skin (photo 9).



Photo 9

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Step 7 (photos 10-12): Attach strap as shown.



Photo 10



Photo 11



Photo 12

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Photos 13-15 show the details of the finished product.



Photo 13



Photo 14



Photo 15