

How to Fabricate The Dart-Splint (Braidotti, Atzei & Fairplay, 2015)

The Dart-Splint was designed to be used for specific rehabilitation protocols for the purpose of limiting radio-carpal joint mobility and SLL overload. This would theoretically facilitate protected midcarpal motion and allow healing of injured or repaired tissues around the proximal carpal row (PCR), which should not be disturbed during early oblique plane wrist movements (Braidotti, Atzei & Fairplay, 2015).

Instructions below quoted directly from:

Braidotti, F., Atzei, A., & Fairplay, T. (2015). Dart-Splint: An innovative orthosis that can be integrated into a scapho-lunate and palmar midcarpal instability re-education protocol. *Journal of Hand Therapy, 28*, 329-335.

Materials used

- 2.4 mm thermoplastic (Orfit)
- Adhesive hook velcro
- Non-adhesive loop velcro
- Rivets
- Plast-O-Fit
- Soft padding

Fabrication procedure

1. The first step is to underline the anatomical landmarks in order to guarantee a precise construction of the Dart-Splint. The palmar hinge should lie above the scaphoid tubercle (easily palpable) and the dorsal hinge should lie at the same level, along the line of the ring finger's metacarpal (which approximates the ulno-dorsal aspect of the hamate) (Fig. 4). The landmarks for the dynamic junction are very important and should be aligned with the DTM axis in order to allow movement along the DTM plane;

2. The orthosis is made of two static thermoplastic components: a carpal unit and an anti-brachial unit (Fig. 5). Once the malleable thermoplastic has been removed from the heated water..., mold the material over patient's hand at the carpal level. Attention should be paid that the hole for the thumb is not too large, excluding the palmar landmark over the scaphoid tubercle where the palmar hinge must lie. The anti-brachial unit is positioned 2 cm inferior to the carpal unit's proximal border, molding it around the palmar aspect of the forearm. Both thermoplastic units should be closed on the hand's and forearm's ulnar side.

3. Underline the landmarks over both carpal and anti-brachial units;

4. Roll and flatten the Plast-O-Fit onto itself and mold it in order to obtain two little perfectly straight connecting bars (about 2 cm width # 6 cm length) (Fig. 6);
5. The 2 connecting bars are interposed between the 2 units in order to form 2 dynamic junctions: one palmar-radial side, the other on the dorso-ulnar side of the orthosis. On the carpal unit, the distal portion of one of the Plast-O-Fit bars should be attached with a rivet to the dorsal landmark, and the distal portion of the other bar to the palmar landmark;
6. Once both dorsal and palmar bars are riveted to the carpal unit, it is then necessary that the patient puts on both units. On each bar, measure a distance of 2-3 cm from the base of the carpal unit to the distal rim of the anti-brachial unit, then allow an additional length of minimum of 2 cm on the proximal extremity of the bar for fixation on the antibrachial unit.
7. Take the splint off the patient and carefully heat the last 2 cm of both bars and mold them simultaneously onto the anti-brachial unit making sure that the bars are perfectly aligned with the rivet, 0 degrees of inclination. Pay attention and be careful to attach the bars straight and parallel to each other;
8. After a few minutes, when the bars are firmly attached, try to test the movement of the orthosis with your hands, before putting the orthosis back on the patient (Fig. 7).
9. When the movement of the orthosis is fluid and the rivets turn easily, the orthosis is put back on the patient that can try the dart throwing movement protected by the orthosis (Fig. 8).
10. To provide further comfort to the patient, the orthosis can be padded along its borders.

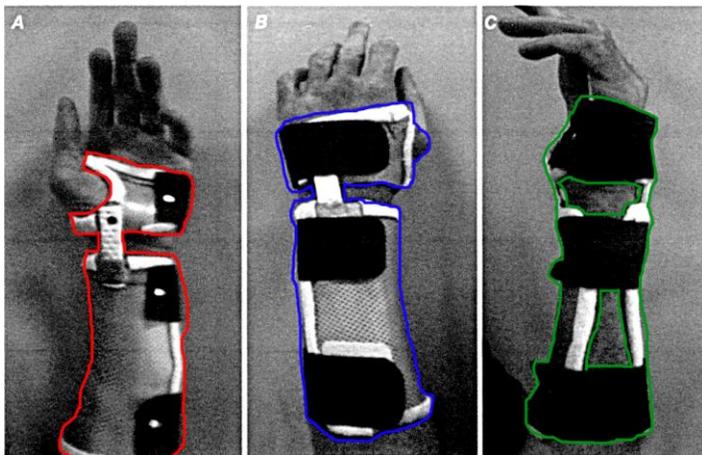


Image adapted from: (Braidotti, Atzei & Fairplay, 2015)

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