



Orthotic Fabrication with Isoforce

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*Step-by-Step Fabrication of the Isoforce Outrigger
Static Progressive Orthosis with Orfit Sheet Material*



Orthotic fabrication of the Isoforce Dynamic Orthosis with Orfitcast

This handout features step by step orthotic fabrication instructions of the Isoforce Outrigger Static Progressive Orthosis with Orfit sheet material.

Materials and recommended amounts:

- Use 1/6th of a sheet of Orfit Colors NS 2.0 mm (1/12") micro perforated for the base orthosis
- Use Orfitcast 3 cm (1") and non-elastic thread for the finger cuff
- Use non-elastic thread to thread the Isoforce unit of a static-progressive orthosis
- Isoforce unit



Create the Base Orthosis

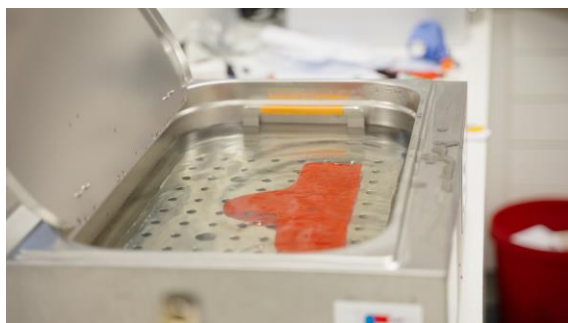
Step by Step Guide

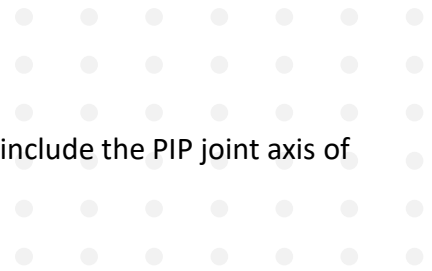
Create the Base Orthosis

1. First, draw a pattern of the patient's hand.
2. Include the proximal phalanx of the involved finger and enough material on the ulnar and radial sides of the hand to create the circumferential base.
3. Trace the pattern onto the sheet of thermoplastic material and make a hole for the thumb.



4. Activate the sheet of thermoplastic material in water of 65°C (149°F) and briefly pat dry.
5. Position on the dorsum of the patient's hand and place the MCP joint of the involved finger in 40 to 70 degrees of flexion.
6. Pinch the material together on the ulnar border.





7. Mold carefully around the involved finger. Make sure to include the PIP joint axis of motion on each side of the involved finger.



8. Trim away material that blocks PIP joint flexion and leave material to cover the PIP joint laterally on each side.



9. Mark the PIP joint axis of motion on each side of the PIP joint as a reference point for placement of the Isoforce unit.





Attach Straps to the Base Orthosis

Step by Step Guide

Attach Straps to the Base Orthosis

10. Place one strap on the ulnar border and one strap over the proximal phalanx.



11. Cut away the excess strap material



Attach the Isoforce Unit to the Base Orthosis

Step by Step Guide

Attach the Isoforce Unit to the Base Orthosis

12. Select the appropriate size of Isoforce: Small, Medium or Large.

Size of Isoforce	Circumference of Proximal Interphalangeal Joint	Distance between Isoforce Pegs
Small	4.0 cm – 5.5 cm (1.75" - 2.25")	15.8 mm (0.6")
Medium	5.5 cm – 7 cm (2.25" - 2.75")	21.8 mm (0.85")
Large	7 cm and greater (2.75" and greater)	27 mm (1.06")

13. Using a hole punch, make holes at the marked axis of motion on each side of the PIP joint.





14. Take two small scraps of sheet material and briefly heat up using dry heat.



15. Cover both marks for the PIP joint axis of motion with the heated scrap material.
16. Place the pegs of the Isoforce immediately on these two spots on the base orthosis. Secure with pressure and fix into the base orthosis.



17. Check if the Isoforce unit moves easily forward and back with the pegs securely embedded in the holes.





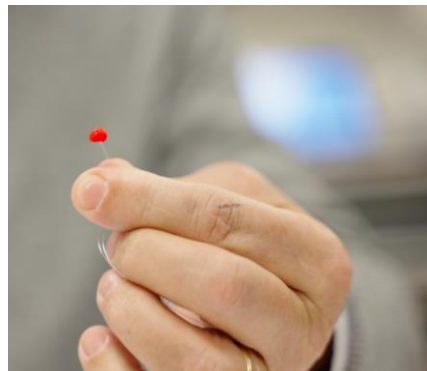
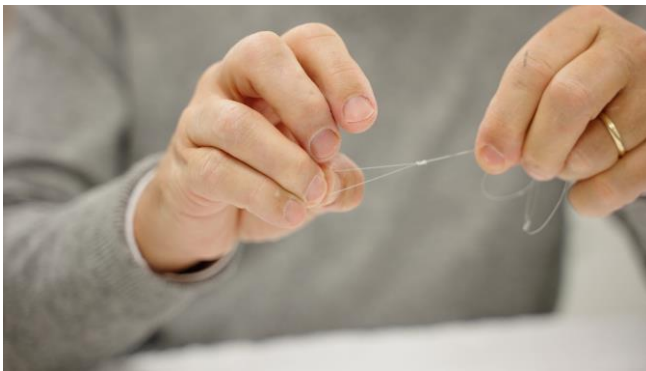
Thread the Isoforce Unit

Step by Step Guide

Thread the Isoforce Unit

Use elastic thread for the creation of a dynamic orthosis, or use non-elastic thread for the creation of a static progressive orthosis. In this example, we are creating a dynamic orthosis with non-elastic thread.

18. Tie a knot on one end of the non-elastic thread
19. Cover the knot with dry-heated sheet material to secure.
20. Pull the thread through the pulling hole.
21. Re-thread the other end through the dorsal canal and let it exit through the bridge.



Thread the Orthosis

Step by Step Guide

Thread the Orthosis

22. Take a piece of thicker elastic thread and dip in hot water. Heating up the thread will prevent sticking to the thermoplastic material.
23. Heat a small piece of scrap material.



24. Create a dorsal tunnel on the dorsum of the orthosis by placing the heated thermoplastic scrap material over the wet thread. Pull the thread back and forth so it does not stick.



- 25. Remove the thread when the thermoplastic material has hardened and bonded.
- 26. Thread the static line from the Isoforce unit through this tunnel.



- 27. Place a piece of adhesive backed hook on the base of the orthosis.
- 28. Create a hole in a small piece of loop strap.
- 29. Attach the thread of the Isoforce into the loop strap hole. The tension can now be adjusted by securing the loop strap onto the adhesive backed hook on the base orthosis.





Create the Finger Cuff

Step by Step Guide

Create the Finger Cuff

30. Cut a piece of Orficast 3 cm (1") width material that covers the volar middle phalanx or the middle and distal phalanges for a longer lever arm.
31. Activate the Orficast material in a 65°C (149°F) water bath.



32. Wrap around the finger and let the finger cuff harden.
33. Trim the sides.



- 34. Don the orthosis and use a straight object to determine the correct hole for placement of the string. Position the straight object at a 90° angle up from the middle phalanx toward the lever arm.



- 35. Create two small holes in the middle of the cuff and thread each side with non-elastic thread.
- 36. Pull the ends of this thread to the hole of the Isoforce outrigger. Make sure to select the hole that provides a 90 degree angle.



37. Check if your patient feels a slight pulling sensation when the finger is held in passive PIP joint extension. Your patient should not feel any pain.



38. Trim away the excess lever arm.



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