

CASTING INTRODUCTION

Along with acquiring professional clinical evaluation skills, taking a quality impression is fundamental to obtaining the best patient outcomes. We realize that every practitioner has developed a unique system of taking impressions based on their educational background, residency experience, and daily practice. It is our hope that the two methods described here will provide new information for those less experienced in casting, and support practitioners with more experience who may be interested in learning or revisiting another method of obtaining a good impression.

The first method uses Orthomerica casting plates to take the impression, and the second method is a freehand casting technique. Please read through the instructions, as they may differ from the method you presently use. Please note the following:

- Both methods use two layers of stockinet. Please incorporate this into whatever technique you use so that the volume within the impression is compatible with our fabrication methods.
- Both methods use fiberglass. We have found this to be superior to plaster if the impression has to be realigned.
- Both methods require delineation of specific landmarks that are important in our fabrication process.
- Both methods require a firm and well-aligned impression, especially in the coronal and transverse planes. Concentrate on mid-foot and forefoot alignment when you take the impression because the sagittal plane (dorsiflexion and plantarflexion) alignment is much easier to correct without cast distortion.

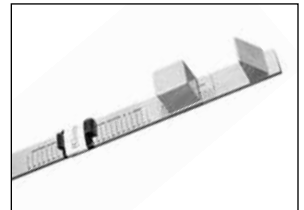
Pre-Cast Assessment

- Evaluate the patient's sagittal and coronal plane range of motion and alignment at the hip, knee and ankle.
- Observe the patient in standing and walking if the patient will be using the orthosis for these positions and document any ankle or knee instability.
- Determine the optimal alignment of the finished orthosis in order to capture this position during the casting procedure.

Casting a Patient with Orthomerica® TC Casting Plates

Determining The Correct Casting Plate Size

1. The Orthomerica foot plate selector device has two sulcus locator ridges: one is designed for very young children, and the other is larger and more appropriate for older children and adults. To change the toe sulcus size, slide the indicator off the edge of the selector device, reverse it, and slide it back into position.



2. Move the square block against the triangular block. Place the calcaneus against the square block and align the foot on the selector device in midline.



3. Slide the sulcus ridge locator under the 2nd toe sulcus and record the measurement at the distal aspect of the toe sulcus ridge. Recheck the position of the sulcus ridge to ensure that it corresponds to the true sulcus of the patient. Record the measurement.



4. Spread open the wooden blocks and position the forefoot so that the 5th metatarsal head is aligned and against the triangular block. Slide the square block to the 1st metatarsal head, being careful to avoid overly compressing the metatarsal heads. Record the measurement.



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TC Flex Casting Instructions (continued)

- Turn the selector device over and locate the width and length on the reverse side. If the width measurement falls evenly between sizes, select the regular width to maximize total contact.



- Apply the appropriate size stockinet to the limb, ensuring that the stockinet extends distal to the toes and 2 cm proximal to the finished trim line of the orthosis.



- Check the casting plate to verify that it is the correct size. The casting plate toe box is extended intentionally and will not match the end of the toes. Bring the casting plate in contact with the calcaneus. Confirm that the calcaneus seats firmly in the calcaneal cup of the casting plate. Lift toes to confirm proper positioning of the casting plate sulcus. Lift the entire casting plate and foot to assess all of the total contact foot plate modifications. The casting plate sulcus should be positioned so that there is about 1/8"-1/4" of space distal to the metatarsal heads to allow for growth in children and to prevent pressure in the toe sulcus in stance. The metatarsal raise should be properly positioned just proximal to the metatarsal heads. The longitudinal and peroneal arches should match the patient's anatomical arches. Edge pressure in these areas can be relieved by removing the casting plate, heating the outside of the plate, and re-contouring the area, or the practitioner can request changes on the orthometry form such as increasing or decreasing the arch, metatarsal relief or toe sulcus.



Casting Process Using A Casting Plate

- Apply a layer of stockinet **over casting plate and stockinet** to a point about half way up the leg. Insert the cutting strip between the layers of stockinet. Pull the 2nd layer of stockinet up the rest of the way and eliminate any wrinkles.



- Precisely draw the following landmarks using an indelible pencil: fibular head or desired proximal trim line, medial and lateral malleoli, navicular, base of the 5th metatarsal, and 1st and 5th metatarsal heads. Please ensure that the landmarks transfer to the inside of the cast.



- Begin wrapping the foot/footplate with fiberglass casting tape from the end of the toes to 2 cm proximal to the desired trim line of the orthosis.



- Vigorously rub your hands over the foot and calf sections to evenly distribute and activate the fiberglass resin.



TC Flex Casting Instructions (continued)

5. Align the foot plate to ensure that it is making contact with the plantar surface of the calcaneus and the calcaneal clip. Just before the fiberglass begins to set up, position the ankle in the desired alignment using a casting stand, floor, or other stable surface. Generally, this position will be easiest to obtain when the hip, knee and ankle are positioned at 90 degrees.



6. Exert downward pressure on the knee in midline to help maintain the sagittal plane position. Work the fiberglass intimately around the achilles, malleoli, and calcaneus. **(It is more important to capture the proper hindfoot, midfoot and forefoot alignment than sagittal plane alignment.)**



7. Mark the midline of the cast vertically and use hatch marks horizontally to facilitate proper alignment of the cast after removal.



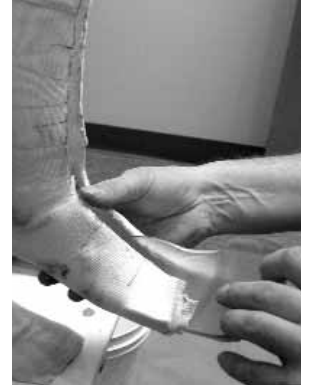
8. When the cast has almost cured and before it becomes extremely rigid, remove the impression by cutting along the cutting strip or flexible tube with a cast cutter, scissors, or other safe cutting device.



9. Using scissors, cut through the fiberglass and outside layer of stockinet. Spread the impression open and remove it from the extremity. Remove the layer of stockinet against the patient's leg.



10. Remove the casting plate and stockinet inside the impression.



11. Check the impression to ensure that it is firm and completely laminated. Evaluate the alignment and definition. If the impression is acceptable, remove the stockinet and close the cast using electrical tape or staples. Label the impression with the patient's name or identification number, allow it to cure completely, and ship it to Orthomerica with the completed paperwork.



TC Flex Casting Instructions (continued)

Hand Casting a Patient for a TC Flex Orthosis

1. Apply a cotton stockinet to the extremity, making sure to extend the stockinet distal to the end of the toes and at least 2 cm proximal to the finished trimline. Apply a second layer of stockinet half way up the leg and insert the cutting strip between the layers.



2. Smooth both layers of stockinet from the end of the toes to at least 2 cm proximal to the finished trimline.



3. Precisely draw the following landmarks using an indelible pencil: Fibular head or desired proximal trim line, medial and lateral malleoli, navicular, base of the 5th metatarsal, and 1st and 5th metatarsal heads. Please ensure that the landmarks transfer to the inside of the cast.



4. Lift up the foot and outline the toe sulcus and proximal aspect of the metatarsal heads.



5. Begin wrapping the foot with fiberglass casting tape from the distal end of the toes to 2 cm proximal to the desired trim line of the orthosis.



6. Vigorously rub your hands over the foot and calf sections to evenly distribute and activate the fiberglass resin.



7. Position one hand with your thumb on one side of the heel web space just distal to the calcaneus, and your index and middle finger between the calcaneus and the base of the 5th metatarsal on the opposite side. With your other hand place your index finger in the toe sulcus and define the metatarsal arch with your thumb. Concentrate on maintaining a vertical calcaneus while you position the forefoot in neutral alignment.



8. Work the fiberglass in completely, delineating the contours of the foot while defining the calcaneus. You may find that it is helpful to change hands throughout the process to get the best impression and forefoot alignment.



TC Flex Casting Instructions (continued)

9. When the plaster begins to set up, position the foot on the floor or casting stand and exert downward pressure on the knee in midline to help maintain the sagittal plane position.



10. Work the fiberglass intimately around the achilles, malleoli, and calcaneus. **It is more important to capture the proper hindfoot, midfoot and forefoot alignment than sagittal plane alignment.**



11. Mark the midline of the cast vertically and use hatch marks horizontally to facilitate proper alignment of the cast after removal.



12. When the cast has almost cured and before it becomes extremely rigid, remove the impression by cutting along the cutting strip or flexible tube with a cast cutter, scissors, or other safe cutting device. Using scissors, cut through the fiberglass and outside layer of stockinet.



13. Spread the impression open and remove it from the extremity. Remove the layer of stockinet against the patient's leg.



14. Check the impression to ensure that it is firm and completely laminated. Evaluate the alignment and definition.



15. If the impression is acceptable, remove the stockinet and close the cast using electrical tape or staples. Label the impression with the patient's name or identification number, allow it to cure completely (approx. 1 hour), and ship it to Orthomerica with the completed paperwork.



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