Bracing Tips endorsed by Ponseti International Association

Bracing protocol needs to be tailored to the individual child based on the age, the relapse rate associated with that age, and when the correction was finished. For example, bracing hours will be longer for a newborn that was corrected in three weeks as opposed to an older child that is already walking when correction is achieved. Importantly, the underlying cause of clubfoot is a muscle developmental and growth problem, so it is very important that children who are using the brace maintain some degree of mobility.

The foot abduction brace is used only after the clubfoot has been completely corrected by manipulation, serial casting, and possibly a heel cord tenotomy. The foot abduction brace, which is the only successful method of preventing a relapse, when used consistently as described is effective in > 95% of the patients. Use of the brace will not cause developmental delays for the child.

A Foot Abduction Brace consists of a bar and footplates onto which shoes attach. The orientation of the footplates to the bar is set by the orthotist as recommended by your doctor. Typically, the shoes are set at 60 to 70 degrees of external rotation on the affected boot. The non-affected boot is typically set to 30 degrees. The last cast applied by the doctor must also have been rotated to the 60 to 70 degrees of abduction (external rotation), otherwise the brace will be uncomfortable for the child. There should be a bend in the bar or the mounting of the footplates to obtain 10-15 degrees of dorsiflexion. The shoes are straight laced, meaning there is no curvature, so they can go on either foot. If the bar does not have a quick-release mechanism, the shoes are oriented with the buckles on the inside, so that you do not have to turn the baby over to tighten the strap and laces. Importantly, the distance between the inside edges of the heels of the shoes is equivalent to the child's shoulder width. This distance is the most comfortable for the child and prevents knee or hip problems. If you lay the brace on the floor with the shoes facing upward, the child's shoulders should fit snugly in between the shoes. Children go through major growth spurts, so if your normally agreeable child is suddenly waking and fussing, it is appropriate to check the length of the bar to see if an adjustment needs to be made prior to their next follow up appointment with the doctor. The FAB holds the foot in the proper abduction (external rotation) and dorsiflexion (forefoot lifting up toward the calf) to keep the foot properly stretched.

Wearing Schedule
Use the brace once the last set of casts is removed. DO NOT wait to get the brace after the cast is removed since there is a high chance of regression that can lead to discomfort and non-acceptance of the brace. Your health care provider will size the feet and write the prescription for the brace during the last casting appointment.

The following schedule is recommended
For young babies with clubfeet corrected in the first few months of life:

23 hours for three months.
Then a gradual weaning schedule as follows: one month 20-22 hours, one month 18-20 hours, one month 16-18 hours and one month 14-16 hours. The time in the brace does not need to be consecutive but try to have the bulk of the time while the child is sleeping nights and naps to encourage mobility during the waking hours. If your child attends a daycare, consider leaving the brace on in the morning and instructing the daycare as to what time each day that the brace should be removed, or if your daycare providers are confident and willing, instruct them how to remove and reapply the brace for nap times.

As the child grows and is walking full time, maintain night-time wearing of the brace for 12-14 hours per day up to age 4-5 years

If the final correction is achieved after 8-9 months of age and the child is ready for crawling or walking, it is important to allow some mobility to help in the development of the weak muscles.

Therefore, it is recommended to start initial bracing with 18-20 hours a day for 2 months, then go to 16 hours a day for 3-4 months, and then to the standard maintenance protocol of 12-14 hours to age 4-5 years.

Some children with clubfoot (about 2 or 3 percent) may also have loose joints.

In these cases, the abduction (external rotation) of 60 to 70 degrees may lead to flat foot, usually presenting when the patient starts walking at 10-16 months of age and after. These children should set the shoe to 30-40 abduction. Do not stop using the brace as there would be risk of relapse.

If the child has atypical/complex clubfoot
After correction, the shoe used for the affected foot should be set to 20-30 degrees. There should not be bending on the bar unless there is 10-15 degrees of dorsiflexion with the last cast. As the foot becomes more normal looking the abduction (extended rotation) of the shoe should be changed to 40-50 degrees.

Wearing instructions
Always use thin cotton socks that cover the foot everywhere the shoe touches the baby's foot and leg. Your baby's skin may be sensitive after the last casting, but this should only last for a day or two. Pull the toe of the sock out lightly if the seams are pressing on the child's toes.
If your child does not fuss when you put the brace on, you may want to focus on getting the worst foot in first and the better one in second. However, if your baby tends to kick a lot when putting on the brace, focus on the better foot first, because the baby will tend to kick into the second shoe.
Place the foot into the shoe, bend the child's knee and push down slightly to make sure the heel is seated and then press gently on the top of the foot (where the leg meets the foot) with your thumb, to make sure that the foot is all the way in, and tighten the middle strap first. The strap helps keep the heel firmly down into the shoe. You can mark the hole on the strap that you use, but because your child's foot will grow, you will have hole adjustments after some time, so make new marks as necessary.
Check that the child's heel is down in the shoe by pulling up and down on the lower leg. If the toes move backwards and forwards, the heel is not down, so you must retighten the strap. A line should be on the insole of the shoe, indicating the location of the child's toes; the toes will be at or beyond this line if the heel is down. Again, the line in the shoe may need to be redrawn with time.
Buckel the shoes tightly. Do not cut off circulation.
Run your finger under the baby's toes to ensure that they are straight and none of them are bent under.

Setting up the Brace
The brace can be set-up by following the recommendations of your doctor or by the personnel at your doctor's office, but you may be responsible for changing the shoes and widening the bar as your child grows. Your doctor should verify that the brace is set up per his/her instructions. New shoes are needed when the baby's toes completely curl over the edge of the shoe. The forefoot adduction usually does not recur, so if the front of the foot is not completely in the shoe, it's not a concern for regression as long as the rest of the shoe is still fitting well. If you do not know what sizes of shoes were used on the bar, measure the length of the shoe and contact your brace provider. New shoes will typically be two sizes larger than the current shoes to allow for

growth. Screws are used on the bottom of the shoes to attach the shoes to the footplate on the bar. For children who are wearing the quick release shoes the shoe clicks on the piece that is screwed to the bar. Attach the shoes with the buckles toward the inside. You should check the width of the bar and adjust it as needed (baby's shoulders fit between the shoes). The difference between the narrow and wide points will increase over time as the size of the shoe increases resulting in the attachment point being farther away from the heel. Mark a line for the location of the toes the first time the shoes are worn, to indicate that the heel is down. Note that if a child was recently casted, it is normal for the foot to have some initial swelling, so the line may not be accurate just a few days later.

Helpful Tips

Expect your child to fuss in the brace for the first 2 days. This is not because the brace is painful, but because it is something new and different. They may have sore muscles and skin sensitivity as a result of the casting. If your child is completely inconsolable and you believe that they are in pain, contact your doctor right away.

Play with your child in the brace. This is a key to getting over the irritability quickly. The child is unable to move his/her legs independent of each other. You must teach your child that he/she can kick and swing the legs simultaneously with the brace on. You can do this by gently flexing and extending the knees by pushing and pulling on the bar of the brace. Try making a game of the motions, singing and or talking to your child in an encouraging manner.

Make it a routine. Children do better if you make this treatment a routine in their life. When the child is only wearing the brace at night and naptime, put the brace on any time your child goes to the "sleeping spot." They will figure out that when it is that time of day, they need to wear the brace. Your child is less likely to fuss if you make the use of this brace a part of the daily routine, just like putting on their pajamas, brushing their teeth, and reading books at night. The brace should be a non-negotiable part of your child's routine, just as you make them sit in a car-seat. Some parents have made a brace for the child's favorite stuffed animal or doll to wear. Show your child pictures of other children with clubfoot wearing their brace and use rewards and incentives to help your child understand the importance of the brace. For older children, ask your doctor to talk to the child at their follow up appointments about their brace and how it helps them keep their feet perfect.

Pad the bar. A bicycle handlebar pad, or foam pipe insulation covered with fabric or tape works well for this. There are also companies that make bar pads. By padding the bar, you will protect your child, yourself, and your furniture from being hit by the bar when the child is wearing it. Placing a sleep sack (gro-bag) on the child at night will also help with padding and keep the baby from pulling at the straps with their hands.

Never use lotion on any red spots on the skin. Lotion will make the problem worse. Some redness is normal with use. Bright red spots or blisters, especially on the back of the heel, usually indicate that the shoe was not worn tightly enough. Make sure that the heel stays down in the shoe. If you notice any bright red spots or blistering contact your physician.

If your child continues to escape from the brace try the following: (check after each step to see if the heel is down, if not proceed to the next step)

Tighten the strap by one more hole
Check the width of the brace and widen bar if necessary.
If you think the foot is regressing, talk to your doctor about the possibility of additional casting.

Relapses and Bracing for Children Treated with the Ponseti Method
Approved by Dr. Jose A Morcuende, President and CEO of the Ponseti International Association and Orthopaedic Surgeon at the University of Iowa Hospitals and Clinics.

Relapses are a common occurrence among children with clubfoot up to the age of six years. The following is the rate of relapse for discontinuing brace-wearing at the age designated: 1st year 90 percent, second year 70-80 percent, third year 30-40 percent, 4th year is 10-15 percent, subsequent years are about 6 percent. Bracing is an essential part of the treatment of clubfoot and prevents relapses very effectively. Severity of the deformity at birth is not a reliable indicator of the odds of relapse, therefore almost all clubfoot patients are held to the same bracing protocols in order to provide them with the best protection against relapse.