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Orthotics Q&A: Prescribing Orthotics For Pediatric Soccer Players

- Clinical Editor: Nicholas Sol, DPM

When treating pediatric soccer players, you may see common conditions such as calcaneal apophysitis and injuries such as lateral ankle sprains. Prescribing orthotics for players also comes with its own set of considerations. Indeed, finding the right orthotic can sometimes be tricky. With that in mind, our expert panelists weigh in on how best to treat this unique group of patients.

Q: What are the two or three most common biomechanical complaints you see in your pediatric patients who play soccer?

A: All three panelists say Sever's disease (calcaneal apophysitis) is among the common range of complaints.

Lonnie Schwartz, DPM, treats Sever's disease aggressively as he emphasizes a combination of heel lifts, ice, stretching and occasional oral antiinflammatories. If the symptoms persist after five days, he places the child in a combination heel lift and Unna boot for seven to 10 days. After these treatments, Dr. Schwartz recommends a home stretching program that consists of stretches for the Achilles tendon, quads and hamstrings.

"I demonstrate the stretches in the office and have written literature for the patients," adds Dr. Schwartz. "Then I ask the parents to show me how to do the stretch properly before they leave the office."

Nicholas Sol, DPM, says he often diagnoses Sever's disease unilaterally.

Aside from commonly seeing calcaneal apophysitis in his patients, Lawrence Huppin, DPM, says he also sees lateral ankle sprains or instability. Dr. Sol cites metatarsalgia as a common complaint and both he and Dr. Schwartz see plantar fasciitis in this patient population as well. Pes planus and calcaneal varus seem to be the most common biomechanical type of problem, according to Dr. Schwartz.

Dr. Sol says growth plates, impact, lateral motion and rapid acceleration and deceleration are key biomechanical considerations for soccer players. Dr. Schwartz points out that most of these players' ailments (including common

complaints such as ingrown toenails and improper shoegear) are related to common training errors, the player's technique and improper shoegear.

"If the child does not strike the ball properly with the instep, then he or she can traumatize the big toe," notes Dr. Schwartz. "This can subject children to a hyperextension as one would see in turf toe and/or direct trauma causing pain and aggravating an ingrown toenail."

Q: What are the most common orthotic modifications you prescribe for these patients?

A: When Dr. Huppin treats lateral ankle instability, he says he will shift the center of the orthotic's reactive force lateral to the axis of the subtalar joint. In doing this, he applies a pronatory torque around the STJ axis and limits the inclination toward oversupination and lateral ankle instability.

Dr. Huppin says the device would include a firm and flat rearfoot post, no bevel on the lateral aspect of the rearfoot post and a valgus extension under the metatarsal heads. You also could use a lateral heel skive to apply a greater pronatory torque, particularly at heel contact, he notes.

If the soccer player has Sever's disease or problems with the Achilles, Dr. Schwartz will usually incorporate a heel lift. For ankle sprains, Dr. Schwartz uses extra depth heel cups and neutral rearfoot posting. For higher performance athletes, he uses a forefoot valgus post. The post enables soccer players to get to the ball of the foot quicker and he points out it is "beneficial for soccer use only and not a good measure for someone who wishes to use their orthotics for their everyday activities."

Most commonly, Dr. Sol uses a full-length extension padded from heel to toe as a modification for pediatric soccer players. "I also try to avoid extrinsic forefoot posting because of the rapid accelerations and lateral motion," says Dr. Sol.

Q: What recommendations do you make regarding soccer shoes?

A: Since it can be a challenge to fit soccer shoes, Dr. Schwartz notes he works with the athletes' parents on proper shoe fit and the proper technique for ball striking. He tells patients to look for the same qualities as they would in any performance shoe. The heel counter should not be too loose or flimsy. Dr. Schwartz says he'll check the torsional stablility of the shoe to control excessive frontal plane motion and makes sure the shoe flexes at the first MPJ to allow for sagittal plane motion.

Dr. Schwartz cautions parents that although shoes with extra heel cleats allow for greater traction, they can cause increased Achilles pressure and lead to a calcaneal apophysitis.

The more stable shoes are a better fit for sports activities, according to Dr. Huppin. He notes that "hard ground" shoes with multiple smaller cleats generally tend to be more stable than "soft ground" shoes with fewer, larger cleats.

As far as soft ground shoes go, those with bladed cleats tend to be more stable than those with traditional cleats.

Drs. Huppin and Schwartz agree that fitting soccer orthoses remains a challenge for numerous reasons.

"The shoe should fit tight for the 'feel' of the ball but that same tightness can lead to problems like ingrown toenails," points out Dr. Schwartz.

As Dr. Huppin notes, soccer shoes traditionally have less volume than other athletic shoes so a removable sock liner is helpful in fitting orthoses. He also recommends patients purchase shoes after they receive their orthoses so they can try on both together.

Be ready to adjust the orthoses for size if necessary, Dr. Huppin cautions. If your patient already has shoes, he advises you to send them and the negative casts to your orthotic lab so the orthoses can be fitted directly into the shoe.

Dr. Sol believes soccer shoes have yet to incorporate many of the features necessary to address soccer's complex biomechanics. "I think that many important changes will be made to soccer shoes in the near future," he notes.

Dr. Sol (shown at the right) founded the Walking Clinic, PC and practices in Colorado Springs, Colo. He is a consultant to Tekscan.

Dr. Huppin is the Director of Education for ProLab Orthotics/USA and is an Adjunct Associate Professor in the Department of Applied Biomechanics at the California College of Podiatric Medicine.

Dr. Schwartz practices at St. Paul's Hospital in Dallas, Texas.

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