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Issue 7 | Winter 2009

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Wren**
places 8th in Kona



Hot Foot

BY STEVE BERKEY, DPT
KERRI KRAMER, MSPT

Let's be honest. Endurance athletes get some twisted satisfaction from pushing their bodies to the limit. They - or dare I say we - spend hours demanding more of our bodies so that we can experience the adrenaline rush crossing yet another finish line that previously seemed unattainable. We beat ourselves up, and during training in pursuit of the next great race, aches and pains inevitably arise. After a while, it's easy to forget what "normal" workout symptoms are. Some clues: Numbness, tingling, and burning sensations do not fall within the realm of expected pains, nor are they safe to ignore. Swimming, biking, and running each have the potential to wreak neurological havoc on specific regions of the body, but in this issue of Tri-DC, we will focus on an injury specific to cycling.

In the front of the line, waiting to inflict misery on the long-distance cyclist, is the infamous "Hot Foot." Some of you are already well-acquainted with shooting pain under the ball of the foot, numbness and tingling in the toes, and that debilitating sensation that someone is pointing a blowtorch at the bottom of your foot. These unpleasant symptoms, known as metatarsalgia in the medical world, are typically caused by compression of the interdigital plantar nerves that run between the bones of the feet (metatarsal heads). Inflammation of the capsules or bursae at the toe joints, as well as inflammation of the bones themselves, can place pressure on the nerves of the feet.

It sounds like these inflicted cyclists are in for nothing but trouble. But wait! It's not time to hang it up and retire yet. Localized metatarsalgia can usually be solved with a simple modification to the shoe, pedal, or both. The trick is to identify the specific cause and address it.

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Put the Puzzle Together

Treating "hot foot" is much like solving a puzzle. The problem most often exists in the interface between the foot and the pedal. By following the systematic process below, "hot foot" can become a problem of the past.



1. Loosen the shoes: The delicate nerves and vessels of the forefoot can become irritated when compressed. By loosening the straps on the shoes, the nerves and vessels have room to "breathe." It is not uncommon for the foot to swell after riding longer distances; therefore it is very important to loosen the shoes. For those who prefer the feel of tighter, more secured straps, another option is to loosen them just during the rest breaks.

2. Try thinner socks: Another method to increase the space within the shoe is to wear thinner socks. Experiment with different cycling-specific socks to alleviate pressure.

3. Adjust the cleat position for clipless pedals: Clipless pedals are great and a necessity when cycling competitively. They maximize power, but can also contribute to increased pressure under the forefoot. This can create "hot foot" for certain types of foot anatomy. Most bicycle fit techniques recommend positioning the cleat so that the knuckle of the big toe (the first metatarsalphalangeal joint) lines up with the pedal axle (Figure 1). Unfortunately, this is not always appropriate.

A simple method to reduce the pressure under the delicate nerves and vessels is to move the cleat back towards the heel of the shoe, approximately two millimeters. If this doesn't change the symptoms, move the cleat closer to the heel, as far back as possible. If you notice any knee pain after this adjustment, consider a professional bicycle fit. Remember that, if the adjustment is large enough, other aspects of the bicycle fit may be affected.

4. Consider specific insoles: Gait patterns differ from person to person. One pattern is overpronation, or walking more on the inside of the foot. This movement dysfunction will cause a functional increase of compression within the shoe while cycling. Using cycling insoles made by Specialized, Superfeet, and Your Sole can provide additional support and may help alleviate "hot foot."

5. Consider wider shoes: Specialized shoes are made wider. If you need a larger than usual shoe size or a wider shoe, contact the manufacturer for specialty shoes.

Consulting a Medical Professional

Common conditions such as Morton's Neuroma can contribute to the foot symptoms. Morton's Neuroma is an enlarged nerve that is usually found between the third and fourth toes; which can create an especially sensitive region of the foot. Custom orthotics may be indicated to support the foot and reduce compression of the structures of the forefoot. Foot symptoms may also originate from the lumbar spine. Any compression of the nerves of the lower back can cause numbness, burning, and tingling of any region of the leg and foot. If you are fighting the notorious "hot foot," consider a variety of factors, try different solutions as outlined, and consult a medical professional as necessary. "Hot foot" should not be ignored and in many cases can easily be resolved. If you have tried all five suggestions with relatively little success, it may be the time to consult a medical professional for a more thorough evaluation of your symptoms.

By day Steve is an orthopedic physical therapist in the Fredericksburg area. By night he is working feverishly to develop 90 Revolutions: an online resource and community of experts dedicated to meeting the diverse needs of endurance athletes through injury prevention, coaching, sports psychology, nutrition, educational resources, and equipment. Visit the site at 90Revolutions.com to learn more.

Kerri Kramer, MSPT, has seven years of experience as an orthopedic physical therapist. She obtained her strength and conditioning certification in 2003 and is currently working toward a doctoral degree in physical therapy. She has been competing in triathlons for four years and has a passion for treating endurance athletes.

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