PROPRIOCEPTIVE INSOLES: FROM A PODIATRIC POINT OF VIEW

By Prof. Brian A. Rothbart, Researcher, Istituto Superiore di Sanita
Department of Biomedical Engineering, Rome, Italy

As a practicing Podiatric Physician and researcher for over 30 years, I have had a passion for understanding the link between foot mechanics and overall body health. I can still remember my professor in biomechanics saying, "the patient's manner of walking not only affects the overall health of the feet, but also the overall health of the body." At that time I did not fully appreciate how prophetic his statement was.

How the foot functions, referred to as biomechanics, is a major determinant in the overall wellness of the patient. From an engineering point of view, this is easy to understand. An unstable foundation can produce problems in the entire building. Likewise, an unstable foot (e.g., one that abnormally pronates) can produce problems in the entire body.

For years I attempted to stabilize foot mechanics by using supportive type foot insoles. These insoles typically incorporated an arch support with forefoot posting (wedging). They were very effective for controlling foot, knee and low back pain, but at a very high price. Over the years, it became apparent to me that by supporting the foot I was weakening it. As long as my patients wore their foot insoles, their body pain was less. However, their pain quickly returned when the insoles were not worn. It appeared I was addicting my patients to their orthoses!

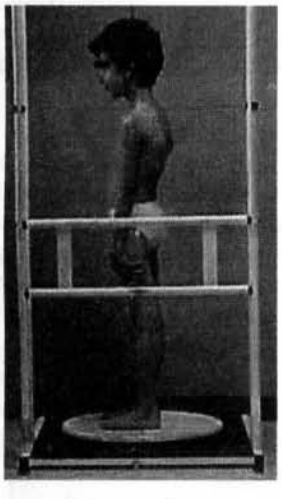

figure 1.

figure 2.

The link between foot and musculoskeletal health cannot be overstated. However, we recently discovered another important link between the foot and the body: **Posture**: Our research indicates that a weak and unstable foot can and often results in postural distortions (poor posture), and these postural distortions occur in young children (See **Fig 1**). It also became clear that postural distortions are a harbinger in the development of chronic body pain. The child with poor posture is the adult with chronic body pain.

In my pursuit to reverse and correct these postural distortions, I continued to use supportive type insoles. The long-term results were less than desirable. These foot insoles definitely improved posture. However, when the insoles were not worn, the postural gains were quickly lost. And alarmingly, in many cases, the posture appeared even worse when compared to pre-therapy photos. This suggested a disturbing link between supporting the foot and weakening the posture.

Obviously, a different approach in therapy was needed!

Proprioceptive Foot Insoles

Ten years ago I started using non-supportive type foot insoles that incorporate a form of acupressure therapy. These insoles, referred to as proprioceptive insoles, apply a tactile stimulation to the bottom of the foot. In theory, this tactile stimulation transmits a signal to the cerebellum (the balance center of the brain) (See **Fig 2**). Acting on this signal, the cerebellum initiates a postural correction affecting the entire body. The posture shifts from a forward, inward position to a straighter more upright position. Postural photos visualize the immediate and far-reaching impact proprioceptive insoles have on the body (See **Figs 3 - 4**).

figure 3

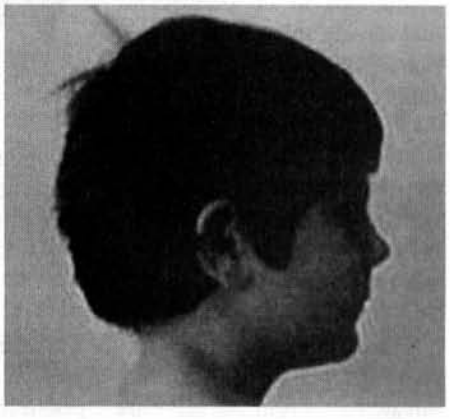

figure 4

Published studies have confirmed the link between improving posture and reducing/eliminating chronic musculoskeletal problems. While both proprioceptive and supportive type foot insoles improve posture, unlike supportive type devices, proprioceptive insoles do **not** weaken the foot. In fact, many of our patients find that they are able to use their proprioceptive insoles less and less and still maintain their level of wellness (referred to as an engram).

For a more detailed discussion on my research dealing with Proprioceptive Stimulation and its use in clinical medicine, visit my website at:
www.rothbartsfoot.bravehost.com