

# **Is Barefoot Better?**

## **The science behind barefoot training**

By: Dr Emily Splichal

One of the hottest buzzwords currently in the fitness industry is “barefoot training”. This recent trend towards a workout sans shoes has been popularized by a myriad of books, professional athletes and websites promoting the benefits of training barefoot.

Mention “barefoot training” to the average gym-goer and the first thing that comes to mind is barefoot running. As a podiatrist who advocates barefoot training, I need to emphasize the difference between barefoot running and training barefoot – and the benefit of each.

For an avid runner who wants to increase their running efficiency or reduce their risk of injury, I would suggest exploring the benefits barefoot running. However, for the average client, athlete, or weekend warrior, I recommend integrating barefoot training for the improvement of lower extremity function and for maintaining proper foot, knee and back health.

As we explore the benefits of barefoot training we must ask ourselves “Why?” Why train barefoot when shoes seem to provide the support and shock absorption needed for optimal performance? The answer to this question lies in the function of the human foot.

### **The Human Foot**

Over one-fourth of all our bones are in our feet. Each foot comes equipped with 26 bones, 33 joints, 107 ligaments and 19 muscles. With an average of 1-1.5 times our body weight in ground reaction forces resonating through our body with each step, our feet play a critical role in the absorption and dissipation of these forces.

As we rhythmically move from heel strike to push-off, the surrounding extrinsic and intrinsic musculature of the foot and ankle must contracture to stabilize our base of support and to propel the body forward.

Many of the foot deformities I see as a podiatrist are a direct result of faulty foot mechanics and an imbalance between weak intrinsic and strong extrinsic musculature. If we want to optimize our foot's function and improve our movement patterns restoring this balance in our feet must be the first step.

## **The Impact of Shoes on Feet**

With the foot as the interface between the ground and the rest of the body, the human foot plays an important role in shock absorption, propulsion and stability. If we were to look at the evolution of the human foot and its function, we would begin to see a pattern in impaired foot function and deformity around the time humans began to wear shoes.

If we were to compare foot shape and function in barefoot populations to those of shod populations, several differences would be quite evident. One comparative study by Hoffman et al. dates all the way back to 1905. This study found several notable differences between shod and barefoot populations in support of the theory that shoe gear may not only be causing foot deformities but also may be impairing the true function of our feet.

One of the biggest differences Hoffman et al. observed in the barefoot populations was adduction or spreading of the toes. This spreading of the toes was used to increase the base of support, thereby providing improved balance and stability. Anyone who has ever taken yoga or done barefoot balance training will appreciate the role our toes play in keeping us stable.

As we stand on one foot our toes naturally contract to grip the ground. A 2009 study by Mickle et al. further supports the role our digits play in stabilization as the study shows that seniors with the strongest toe strength report the least number of falls.

Another difference Hoffman et al. noted between barefoot and shod foot-types was the absence of flat feet in barefoot populations. As we walk, stand and jump the intrinsic foot musculature must contract to absorb the shock and to maintain our foot posture.

Numerous studies have demonstrated that the intrinsic muscles of our feet become "lazy" in shoes (3). With the intrinsic muscles playing an important role in

maintaining the stability of our medial arch, shoes may be partially to blame for the prevalence of flat feet observed in shod populations.

## **Benefits of Barefoot Training**

### **1. Improved foot posture.**

Studies have demonstrated that 6 weeks of barefoot training improved medial arch height and rearfoot posture. Since there is a correlation between foot posture and lower extremity function, improving the musculature support of the foot can decrease the risk of knee and low back pain.

### **2. Improved balance and stability.**

The skin on the bottom of our feet plays an important role in balance and upright stance, and has been shown to be more sensitive than ankle joint proprioceptors and muscle response. By training barefoot we will better activate this plantar feedback system, which in turn will provides a more accurate perception of our stability and ground reaction forces, therefore reducing our risk of injury.

### **3. Improved performance.**

Barefoot training allows us to activate all the muscles of the foot and ankle, creating more efficient movement patterns and improved athletic performance. Since the foot acts as the foundation to human movement, the ability to achieve a full range of motion and activation of intrinsic musculature allows for dynamic shock absorption and proper foot alignment.

## **Introducing Barefoot Training**

Baseline foot function must be considered before introducing barefoot training into a workout. Since the average adult has minimal exposure to working out barefoot, it is important to begin any barefoot training program by first improving foot mobility.

Foot mobility means more than increasing the flexibility of the calves; it also to free the muscles and fascia on the bottom of the feet. Begin by introducing stretches to the muscles that surround the lower leg, including the peroneals, gastrocnemius, soleus and posterior tibialis. Daily myofascial release should be integrated to the plantar musculature by standing on golf balls and rolling on a foam roller.

After the foot begins to increase in flexibility, begin to introduce exercises targeted to strengthen the intrinsic musculature. Exercises such as toe crunches, picking up marbles and lifting the arch are great ways to activate the smaller muscles of the feet.

As the feet become stronger, progress by adding barefoot balance exercises that will challenge foot strength and ankle stability. Most traditional resistance training exercises can be integrated into a barefoot balance training workout. This not only adds a new challenge to the workout, but will also correct foot posture and total body alignment.

## References

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## About the Author

**Dr Emily Splichal**, Podiatrist and Human Movement Specialist, is the Founder of the **Evidence Based Fitness Academy (EBFA)**. With over 11 years in the fitness industry, Dr Splichal has dedicated her medical career towards studying postural alignment and human movement as it relates to foot posture and foot strength. Dr Splichal is expert lecturer and TV personality with appearances on Oprah Winfrey, The Today Show & Good Day NY. Dr Splichal is sought after for her expertise in barefoot training, foot health and postural alignment.

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