Question

Billions have been spent on running shoe research every year, so why aren't injury levels decreasing?

The facts
Chronic lower leg injuries are rare in countries where people run barefoot.[1]

Injury prevalence has been reported to be as high as 85% per year in shod populations.[2]

Natural foot structures are actually weakened by long-term footwear use. People learn to depend on the external support of the footwear, but the support does not match that provided by a well functioning foot.[3]

References

1 Robbins SE, Hanna AM (1987) Running-related injury prevention through barefoot adaptations. Medicine and Science in Sports and Exercise 19, 148 -156
2 Lun et al. (2004) Relation between running injury and static lower limb alignment in recreational runners. British Journal of Sports Medicine, 38, 576 - 580.
3 Yessis M (2000) Explosive running, Illinois, USA. Contemporary Books.
4. Brüggemann, G.P. Effect of increased mechanical stimuli on foot muscles functional calacity. ISB XXth Congress - ASB 29th Annual Meeting.

How to train with the NIKE FREE

The Nike FREE is not intended to replace your regular running shoes but should be used as a complementary training tool. When introduced into training sessions on a gradual basis it increases foot strength and flexibility by encouraging the foot to behave as it would barefoot whilst providing a necessary level of protection and traction.

It is important to respect and 'listen' to your body. Gradually increase use of the Nike FREE to steadily build up the strength of your feet.

The barefoot spectrum
On a spectrum of 0.0 - 10.0, 0.0 is barefoot, Nike FREE footwear is available in 3.0 and 5.0 and 10.0 represents your traditional running shoe.

NIKE FREE™
train your feet

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The Nike FREE mimics the effects and the benefits of running barefoot:

- increasing foot and lower limb strength
- improving posture and gait
- decreasing risk of injury
- leading to better performance

Answer

Inspired by feedback from athletes, coaches and emerging statistical information about the effectiveness of running shoes, Nike conducted extensive clinical research into how the foot behaves dynamically barefoot, compared to in a traditional running shoe.

Analysis of Barefoot Biomechanics

Video Analysis
Nike used high speed video analysis to evaluate lower extremity biomechanics during barefoot and shod running.

In comparison to running in conventional running shoes, researchers found during barefoot running subjects displayed:

- Minimal difference in thigh angle
- Minimal difference in knee angle
- Reduced ankle angle at initial contact
- More MPJ at initial contact
- Increased MPJ dorsi-flexion during 2nd half of foot-ground contact
- MPJ plantar-flexion during contact
- Forefoot spreads during foot-ground contact

Video Capture

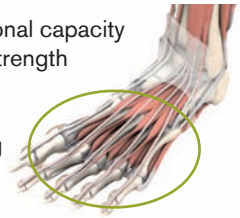
Plan
tar Pressure Analysis
Significant differences between barefoot and shod running were also found during plantar pressure analysis.

Whilst running barefoot, the analysis revealed increased pressure dissipation at the heel, mid-foot, across the metatarsal heads throughout all stages of foot contact. Interestingly the hallux was also engaged to a far greater extent during barefoot running.

Barefoot Traditional Shoe

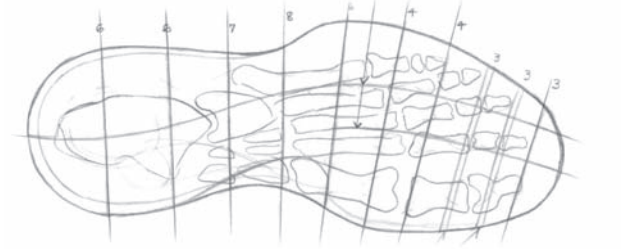
Nike FREE Design and Development

Nike clinical trials revealed that the functional capacity of the arch of the foot is dictated by the strength and flexibility of the muscles in this area.



Running barefoot amplifies foot loading so that over time, the foot and lower leg muscles become stronger and more flexible. The research results lead to the development of a shoe that would mimic the effects of running barefoot.

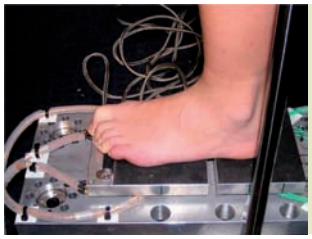
A new style flexible 'last' was developed to assist in the construction of a shoe that would release the tensions and rigidity of existing sports footwear allowing the foot to control the shoe rather than vice-versa.

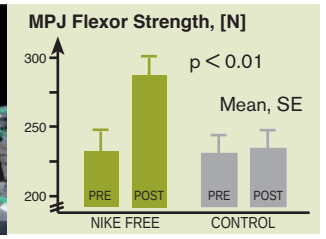


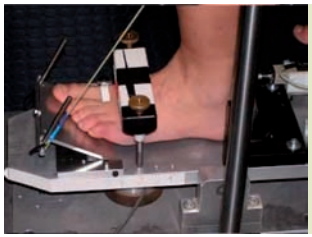
A sole grid pattern was created to match the exact structure of the foot and motion data. The heel is split to mimic the roll through from contact to push off. The big toe is split from the other toes for excellent push off and the reverse grooves in the forefoot allow the smaller toes to grip the earth.

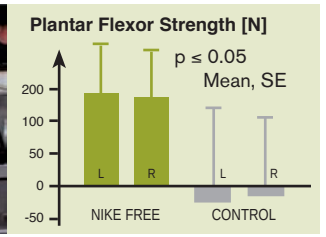
Clinical Product Research

Professor Brüggemann of the University of Cologne conducted a pre-test and post-test controlled study. The experimental group wore the Nike FREE to warm up for 30 minutes 3 - 4 times a week over a 6 month period. They saw a significant increase in foot strength and flexibility.[4]









Results of training with NikeFREE

To the average foot, the Nike FREE is a wake up call to under-used muscles. When used as part of a structured training programme the Nike FREE had the following effects:

- Increased foot and ankle strength
- Increased muscular cross section
- Increased foot and ankle range of motion
- Increased flexibility

This should lead to improved performance and decreased injury susceptibility.

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