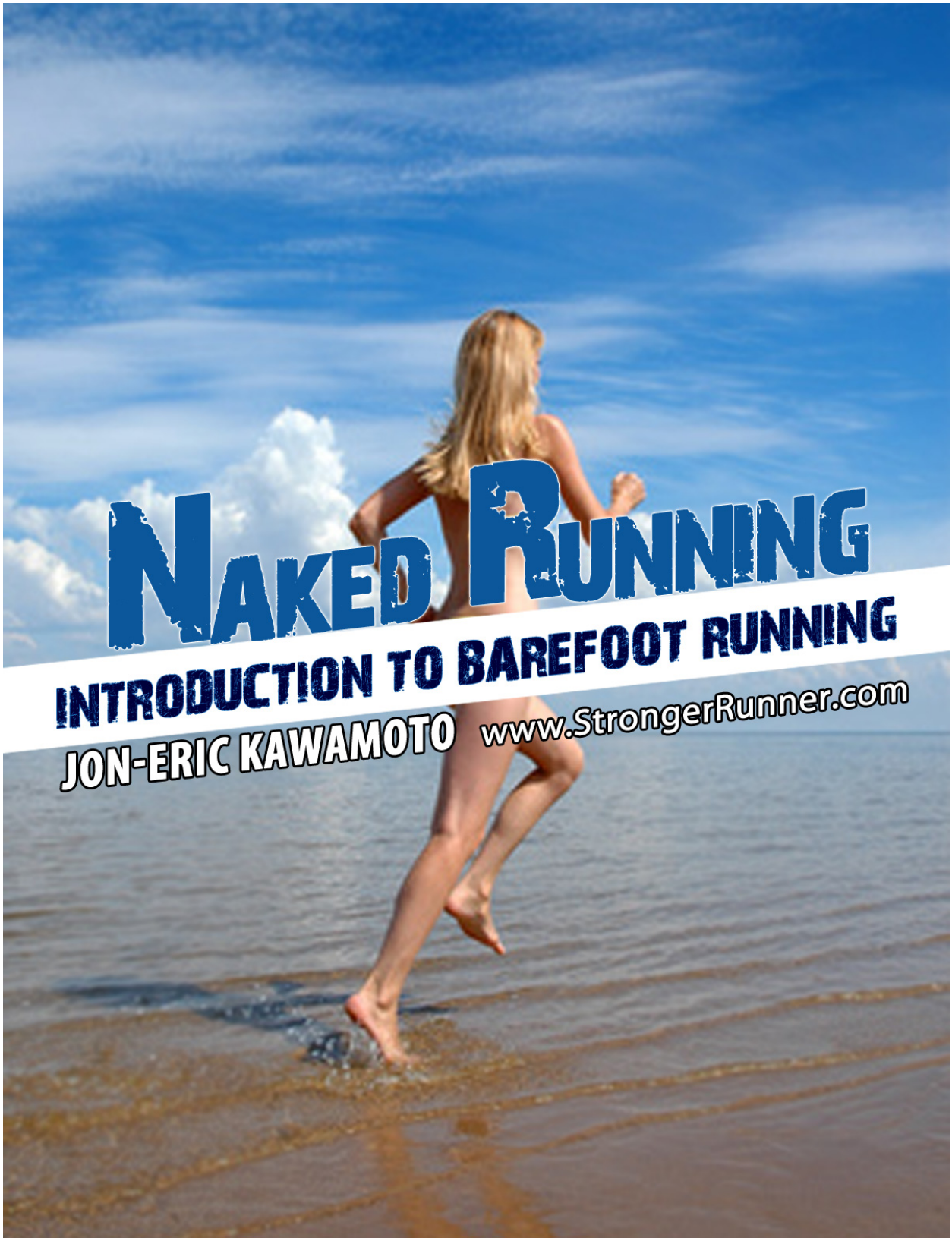


Jon-Erik Kawamoto, B.Sc. (KIN. Co-op.), CSCS, CEP
www.**StrongerRunner.com**

#

Table of Contents

Title:
Naked Running: An Introduction to Barefoot Running

Edition:
1st edition (September 2010)
2nd edition (November 2010)

Author: Kawamoto, Jon-Erik

Key words: barefoot running, running injuries, strength training, Vibram Fivefingers, Nike Free, minimalist running

Published by:

JKConditioning
Unit 64 – 7088 17th Ave.
Burnaby, BC, Canada
V3N 1K5

E-mail: jonerikkawamoto@gmail.com
Webpage: http://www.JKConditioning.com and http://www.StrongerRunner.com

Phone: (604) 374-5805

Exercise Considerations

You or your clients are encouraged to consult with a physician before beginning barefoot running. A physician can determine whether barefoot running is appropriate for your client.

Disclaimer

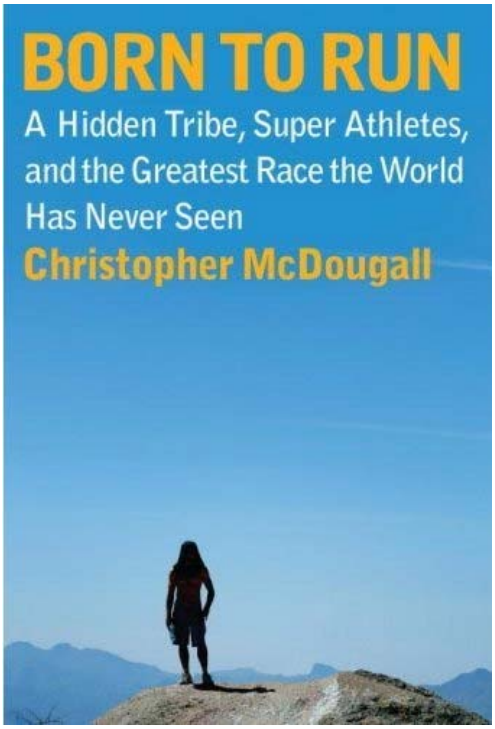
Naked Running: An Introduction to Barefoot Running is primarily an educational resource and is not intended to take the place of the advice and recommendations of a physician. If you suspect your client has a health problem, please have him or her seek the services of a physician or healthcare professional.

Exercise is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in exercise and exercise prescriptions are inevitable. The author has checked with sources believed to be reliable in his effort to provide information that is complete and generally in accord with the standards accepted at the time of publication. However, in view of the possibility of human error or changes in exercise science, neither the author nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information. Readers are encouraged to confirm the information contained herein with other sources.

Jon-Erik Kawamoto, B.Sc. (KIN. Co-op.), CSCS, CEP
www.**StrongerRunner.com**

#

Born To Run



I've been asked lately what I thought about barefoot running and found myself unable to answer. While I have read that everyone should run barefoot because it **reduces injury risk** and forces a **more natural running stride**, I also read that **barefoot running wasn't for everyone.** Apparently, because of the barefoot running craze, physical therapists were still busy with running injuries…not from those wearing supportive shoes, but those who thought they could run mile after mile barefoot!

Barefoot running has received a lot of attention lately, thanks to books like Christopher McDougall's, *Born to Run*.

This entertaining book comes highly recommended to running enthusiasts, and is about the Tarahumara tribe based in northern Mexico. This tribe is also known as *Rarámuri*, which means "runners on foot" or "those who run fast." The *Rarámuri* run in homemade sandals that only provide a thin barrier to the rocky, desert terrain - without injury. This is a very interesting fact considering they run extremely long distances (up to and more than 100 miles at a time).

I am an experienced runner who used to run track and field, cross country and road races at a highly competitive level. Like most runners, mid-running career, I was injured. I was diagnosed with IT Band Friction Syndrome which caused pain on the lateral side (outside) of my right knee, when going down stairs and when I

ran. It was recommended I wear orthotics, and I had to stop running and take measures to heal from cross training, to hip exercises, massage therapy, acupuncture and my custom-fit orthotics. I slowly started running again, but stopped competing.

With the attention barefoot running has gotten recently, I wondered if more barefoot running would have helped prevent my injury? Ever since I stopped running competitively, I stopped wearing my orthotics and only run in Nike Frees or racing flats. While I don't have any aches or pains, I also don't run the miles I used to.

The experts say that running without shoes is very different than running in typical thick soled running shoes. Because barefoot runners assume a **more natural running stride**, landing mid-foot rather than on your heel, it is thought to cause less stress on a runner's body, and therefore, create less injury. Landing on your heel and rolling toward your toes, as most runners do, actually slows you down because there is a large decelerative force into the ground and a large force sent up your straight leg hitting each joint all the way up the chain.

When you run barefoot, your mid-foot naturally hits the ground first which then relies on your arch and leg muscles to absorb the shock. Your heel will momentarily hit the ground and you will spring forward into the next stride. When you use and strengthen your intrinsic foot muscles (when running in Nike Frees, for example), it allows the foot to move in a more "natural" range of motion.

The day after I wore my Nike Frees for the first time, I felt like I had done a 10km race the day before and a million hill sprints in the sand. My calves and arches were exhausted! The stiffness wore off as I got stronger and used to running in my Nike Frees. As a result of my curiosity and personal experiences with running in lighter shoes, I wanted to learn more about barefoot or "free" running. In my research, I came across some shocking and interesting information.

Vibram Fivefingers

Below is one study that might make you think twice the next time a running shoe store employee tells you what shoe you NEED to buy.

The effect of three different levels of footwear stability on pain outcomes in women runners: a randomized control trial
Michael B Ryan, Gordon A Valiant, Kymberly McDonald, Jack E Taunton
Br J Sports Med June 2010
http://bjsm.bmj.com/content/early/2010/06/26/bjsm.2009.069849.abstract

This study looked at randomly assigning shoe category type (neutral, stability and motion control) to 3 groups of different foot posture types (neutral, pronated and highly pronated). All runners were female and undertook a 13-week half marathon training program. Thirty two percent of the runners missed training days due to pain/injury. Many runners felt pain when **correctly** assigned the proper running shoe compared to being assigned the "incorrect" level of support. This study concludes that the "current approach of prescribing in-shoe pronation control systems on the basis of foot type is overly simplistic and potentially injurious."

This research study made me begin to question the validity of companies and websites that claim to analyze your needs by asking a few questions and then determining which of their products is best for you.

On the other side of the spectrum, I discovered the following website, which argues that less is more in a running shoe: http://www.youarethetechnology.com/

This website advertises a product that mimics barefoot walking-running, and is called the **Vibram Fivefingers** (http://www.vibramfivefingers.com/)

At the time of this writing, I have tried on a pair of them and found them extremely comfortable.

I have ordered my own pair and will review them soon, sharing my recommendations and opinions about barefoot running. I will compare the Vibram Fivefinger and Nike Free running in a future post.

A new way to think about running

Since the modern running shoe came to us in the 1970s, our society has believed in, and worn, supportive and corrective shoes. In other parts of the world, like Australia and New Zealand, however, it is quite common to see people walking and running around barefeet.

As previously stated, experts believe that barefoot walking, running and other activities "exercise" the intrinsic foot muscles - muscles that are not used in a structured, rigid shoe. **Your foot muscles are like any other muscle in your body...if you don't use it, you'll lose it!** Barefoot activity acts like strength training for your foot and lower leg muscles. Other benefits of using these muscles are an improvement in balance, proprioception, agility and also a reduced risk of foot injuries.

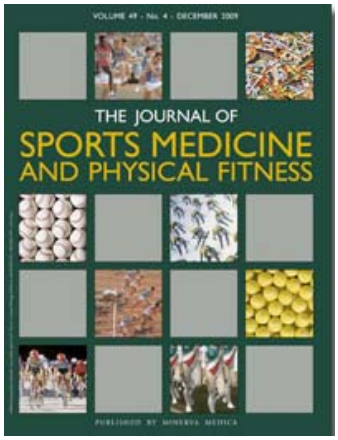
Jon-Erik Kawamoto, B.Sc. (KIN. Co-op.), CSCS, CEP
www.**StrongerRunner.com**

#

At first glance, when **comparing the Fivefingers to the Nike Free**, there is quite a difference!

For starters, the Fivefingers has toe pockets, which allow each individual toe to work as they do when running barefoot. The Fivefingers has minimal support and a very low profile, allowing the shoe to act as a protective skin for your foot, while still allowing the "feel" of running barefoot.

The following study compares shoe running vs. barefoot running vs. fivefinger running:



Biomechanical and physiological comparison of barefoot and two shod conditions in experienced barefoot runners.
Squadrone R, Gallozzi C.
J Sports Med Phys Fitness. 2009 Mar;49(1):6-13.
http://www.ncbi.nlm.nih.gov/pubmed/19188889

This study found that barefoot runners land with a more plantarflexed ankle, which reduces collision forces and changes stride kinematics. Squadrone and Gallozzi found significantly shorter stride lengths, ground-contact times and higher stride turnover compared with shod running. They also found that running in the Vibram Fivefingers was significantly comparable to running bare feet.

Shoe companies Wrong?

The September 2010 issue of *Running Times* magazine features a great article by Brian Metzler on barefoot running called “Change is a foot - Shoe makers are targeting natural running concept”.

Metzler’s article explores some of the same research I have come across, including Christopher McDougal’s *Born to Run.*

As we know, when we walk, we land on our heels and roll inward and toe off from our big toe. We also know that large cushion/heeled running shoes force us to do the same: land on our heel, roll inward and toe off from our big toe.

Barefoot running, however, changes our foot contact with the ground to a more mid-foot, fore-foot strike. The heel momentarily touches the ground and your momentum springs you forward.

Understandably, my next question is **why, for 30 years, have running shoe companies applied the biomechanics of walking to running?**

Have the shoe companies been wrong for 30 years?

In Metzler’s article he quotes Jay Dicharry, an MPT and director of the SPEED Clinic at the University of Virginia’s Center for Endurance Sport, who states “but the key isn’t whether you strike at the heel or mid-foot or fore-foot...The key is

having your foot strike below the center of your mass and not out front of it". An interesting point, although difficult to accomplish – which is why in runners there is a large collision force and a large deceleration force.

Newton's Natural Running Page illustrates this in animation at the following website: **http://www.newtonrunning.com/run-better/optimal-running-form**

One thing we can be certain of, and that is the shift toward natural running, and as a result, minimalist running shoes being produced by the shoe industry,. At this point, the Vibram Fivefingers are the closest thing to barefoot running footwear on the market.

My previous minimalist runners, the Nike Frees, are designed based on a scale from 1 to 10. Nike rates bare feet at 1, and shoes are a 10 . The lower the rating, the lower the shoe profile and support. To my knowledge, the lowest rating for a Nike Free is the Nike Free 3.0.

If you are not used to minimalist running, and want to transition from a regular shoe, I would recommend trying something on the scale at a 3.0, and then the Vibram Fivefingers. Gradually reducing your time in shoes and training the muscles you don't normally use while running will slowly build your tolerance and strength for natural running.

Not surprisingly, other brands are responding to the move toward minimalist running. According to Metzler's article, *New Balance, Merrel, Terra Plana and*

Newton are all coming out with new models of footwear designed for natural running.

It will be interesting to see where the shoe industry takes the research in support of minimalist running. For 30 years the market push was for running shoes that were fancier and fancier...air here, plastic here, mesh there, Z90 foam here...but it seems that if the new research is correct, so much technology is over-the-top and unnecessary.

It seem as though less is more...and better!

The bottom line

I recently received my Vibram Fivefingers KSO (Keep Stuff Out) in the mail and have been wearing them for easy runs and kettlebell workouts.

The **fit is amazing and they are quite comfortable**. While it takes a while to get them on because the toes don't go in the correct pocket all the time, they do feel like a second skin and allow for natural movement of the foot. The toe pockets look weird when you're looking down at your feet and that's something I still haven't gotten used to; however, the concept is great. The toe pockets allow your toes to spread out during toe off to allow for better proprioception, balance and sensory feedback.

I love running with the KSOs on grass and artificial turf fields. The KSOs allow for a natural barefoot feeling while providing a thin layer of protection. They also feel great when doing squats, deadlifts, kettlebell exercises and any other lower body exercise. The KSOs low profile allows the foot to remain flat and level on the ground without being influenced with a large heel as when wearing running shoes. As an aside, you want to squat or deadlift in flat shoes or in the Vibrams because you want to keep the weight on your heels. Having a high cushiony

heel shifts your weight anterior to the toes which effects the biomechanics up the chain. It can affect your balance and also reduce your power output because you won't be able to drive through your heels. If you don't have Vibrams, you can squat or deadlift barefoot or in Chuck Taylor's.

Another side note – middle to long distance runners can benefit highly from performing the conventional deadlift. Because gluteal amnesia is so common in runners, a program that includes corrective/prehabilitation exercises for the hips and compound leg/hip exercises such as the deadlift will ensure a reduced injury risk for the runner. The deadlift is a tremendous exercise for strengthening the backside..

While the KSOs work well on natural surfaces, they are not preferable on cement or packed gravel trails. Humans were designed to run, but we weren't designed to run on concrete! There is no give whatsoever when running down the sidewalk in these shoes. I can imagine stress fractures developing in the mid- to fore-foot of endurance athletes because of this lack of cushioning/give.

These shoes are minimalist enough that every also pebble and rock on can be felt. For this reason, Vibram has other Fivefinger models out specifically for trail running – the KSO Trek and Treksport. I wore my KSOs around Burnaby Lake

today – packed gravel and roughly 10km around – and it was a terrible idea! I had to focus on every step to make sure I didn't land on a sharp rock. Vibram also has the new Fivefingers Bikila out which also has added protection.
For those who don't like the toe pockets, there is another brand promoting minimalist shoes called Altra – http://altrarunning.com/. This company offers minimalist shoes similar to Vibram, but they have an enclosed toe box.
New Balance also has a new minimalist shoe for 2011 called the New Balance Minimus Trail Shoe. Interestingly, the sole of the shoe is created by Vibram.

Bottom line for the Vibram Fivefingers KSO – As noted previously, while I don't like wearing them for concrete or trail running because there isn't enough cushioning for me, I like wearing them for leg exercises (e.g. squats and deadlifts) and for kettlebell workouts. I would only wear them for running on grass fields or artificial turf fields.

My old Nike Free Plus has given me numerous blisters in the months I wore them, and I find the sole too thick to experience minimalist running. All in all, my favorite minimalist running shoe (so far) is the Nike Free 3.0. The mid-sole has a very low profile but still provides a decent amount of protection and cushioning for concrete running. I'm curious to try the Nike Free 3.0 II, which will be my next purchase.

Based on my research and personal experience, I would say that barefoot/minimalist running isn't for everyone! Those with biomechanical inefficiencies and foot orthotics should limit their barefoot running mileage, or consult with their foot doctor/pedorthist to determine what is best for them.

Jon-Erik Kawamoto, B.Sc. (KIN. Co-op.), CSCS, CEP
www.**StrongerRunner.com**

#

Here are some good reads/sites on barefoot running:

- www.runblogger.com
- www.vibramfivefingers.com
- www.barefootted.com/index.php?q=/
- http://barefootrunning.fas.harvard.edu/
- http://running.competitor.com/2010/05/features/but-is-it-faster_9784#ixzz0n6sBZEz1
- http://natickcc.home.comcast.net/~natickcc/l3_paper.htm
- http://barefootrunningshoes.org/
- http://www.runningbarefootisbad.com/

Zero Drop Nike Free Plus

Someone from the barefoot community corrected me the other day saying that running in the Nike Frees were not considered true 'barefoot running.' He added the heel was too thick and it prevents you from landing with a natural mid-foot strike. I stand corrected and decided to do some research. Normal running shoes usually have a 22-24 mm thick heel and a 10-15 mm thick forefoot. This leaves us with a drop of roughly 12-14 mm drop. Minimalist shoes typically have a 10 mm or less drop from heel to toe. I knew I had to get rid of this FAT heel if I wanted the ride to feel more "natural."

I found a guy that made his Nike Frees "**Zero Drop**" — I decided I wanted to make mine zero drop too. I love running in my Fivefinges, but wanted a little more padding for running on asphalt/cement.

In the barefoot running community, one of the many features of a true "barefoot" shoe is that it has zero drop. Zero drop describes the height of the heel being the same height of the forefoot off the ground. You can see this when comparing

the Nike Free Plus before and after I took them to the cobbler (Shoe repair person.). This allows more of a natural foot contact with the ground – a mid-foot strike rather than a heel strike. Really thick-soled running shoes force you to land on your heel –

some runners can consciously land mid-foot in these types of shoes, but it definitely doesn't happen naturally.

I went for a 30 minute run in my new zero drop Nike Free Plus's the other day and thought the ride was very comfortable. I could really notice how much lighter the shoe felt and how low I was to the ground. I could land mid-foot naturally and found it easier to land lighter on my feet with a shorter running stride. I could still feel a few pebbles here and there but it wasn't as bad as running in the Vibram KSOs around Burnaby Lake. I wouldn't wear these zero drop Nike Frees in the rain or on gravel trails because there is no grip – you'll notice it's just smooth foam.

I would also squat/deadlift and do kettlebell workouts in them with no problem.

Is Barefoot Running for You?

Is barefoot running the best thing since sliced-bread?

Maybe…maybe not.

I'll agree and say that minimalist running is fantastic – it's a great feeling to run with nothing or almost nothing on your feet. I went for a 10km run yesterday in my Vibram Fivefingers KSOs and it felt great — my calves on the other hand are very tender to the touch today…after this, I'll be spending some time on the foam roller!

Running barefoot or in the "toe shoes" promotes a more natural running gait:

- mid-foot to forefoot strike as opposed to a heel strike (decelerating force and potentially associated with a higher injury risk)
- shorter stride length
- higher turnover
- making ground contact with a plantar flexed ankle rather than a dorsiflexed ankle
- a lighter ground contact vs. a higher ground contact with a heel strike
- a higher energy return and more efficient running style

But is it for you?

The minimalist running community claims that running in minimalist shoes will also reduce injury risk. I'll agree with them on that, BUT some people will take it too far and go from wearing running shoe boats to the Fivefingers and wonder whey they have Achilles Tendon issues. There has to be balance and if your body is used to wearing a very structured shoe, you're going to have to teach it how to run in minimalist shoes – kind of like breaking in orthotics –> you have to gradually build up your tolerance to running the in Fivefingers or similar minimalist footwear.

Can you wear minimalist shoes for all your runs?

Followers will say YES, while the elites will say NO. Elite runners wear minimalist shoes for most of their training workouts – wearing racing flats or spikes – but for the remainder of their runs, they wear more structured shoes. They put a lot of miles on those feet and maybe wearing a more structured padded shoe provides the much needed cushioning, perhaps keeping them injury free.

Trying to decide if barefoot running is for you?

Try to finish some of your runs at a track or grass field. Take your shoes and socks off and do some form drills and acceleration strides on the grass. Try to listen to your feet and your body and run naturally. This will strengthen your body and more importantly your feet. Look at this as strength and conditioning your feet – then if you do decide to run longer distances in a pair of minimalist footwear, your feet will be ready!

Jon-Erik Kawamoto, B.Sc. (KIN. Co-op.), CSCS, CEP
www.**StrongerRunner.com**

#

About Jon-Erik Kawamoto

My name is Jon-Erik Kawamoto. I'm a Strength and Conditioning Specialist (CSCS – with the National Strength and Conditioning Association) and Certified Exercise Physiologist (CEP – with the Canadian Society for Exercise Physiology). I specialize in helping middle-to-long distance runners become strong and powerful. I have authored many articles on strength and conditioning for the endurance athlete in magazines such as Canadian Running, IMPACT, Canadian Cycling and the BC Coaches Perspective.

Photo by Ian Sheh

I graduated from Simon Fraser University (SFU), Burnaby, BC, Canada in the fall of 2005 with a Kinesiology Cooperative Education degree and certificates in Health and Fitness Studies and Applied Human Nutrition.

Vancouver Sun Run

My strength coaching experience ranges from beginners to elites (highly competitive to nationally carded) and everyone in between. I also competed in track and field, cross-country and road races for over 9 years – club and varsity. I know what it's like to run 100 miles per week…I know what it's like to be disappointed with injuries…I know what it's like to cross the finish line knowing I gave it my best. That's why I developed this site. When I was

competing, I didn't know what the best exercises were for running so I wanted to create a resource for all you runners out there that want to get strong…want to get powerful…and stay injury free.

Services

- Jon provides personal and athletic training – either 1-on-1 or via semi-private sessions.
- He specializes in strength and conditioning middle-to-long distance runners.
- His workouts are designed to improve running economy and to reduce injury risk in the runner. The goal is to improve strength and power production with minimal weight gain and only positive influence to the running program.
- The program combines mobility and flexibility training, muscle imbalance corrective exercises, prehabilitation exercises, running specific strength training exercises, effective core stability exercises and plyometric drills.
- The runner will leave stronger and more powerful than ever! Their core will be tree trunk solid and running style super efficient.
- Jon also offers lectures and presentations on How to Become a Stronger Runner.

Jon can be contacted via email at: jonerikkawamoto@gmail.com