

Understanding the Effects of Prolonged Standing And Self-Care Measures for the Massage Therapists

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I thank Bruce Thomson for generously allowing me to use work from his phenomenal website at <http://www.easyvigour.net.nz>

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Part I

Chapter 1

What We Know

In the 1870s and 80s, physicians throughout Paris, London and New York demanded stores provide chairs for all shop girls. They were concerned by the excessive number of shop girls suffering with foot ailments from prolonged stand. Having to wear dress shoes all day was a contributing factor. The doctors referred to the standing working conditions as "cruelty to women." So what happened? Did chivalry die? Because today many people, men included, are working long hours on their feet. I don't see any chairs around. Do you? In fact, in the United Kingdom 11 million workers, half the work force, will face health problems from having to spend most of their work day standing.¹

There seems to be no great movement to draw attention to the dangers of continuously standing. In self defense as well as being a health provider, it is best to understand prolonged standing. We need to know what can happen, how it happens and what we can do to stop it from happening.

When one must remain standing for a long period, it stresses the musculoskeletal system affecting feet, legs, hips, back, neck and shoulders. Excessive standing taxes the circulatory system, which may result in hypertension, hemorrhoids and/or varicose veins. Research shows pregnant women working in these jobs tend to have

lower birth weight babies with shorter gestation periods. They are also more likely to experience spontaneous abortion.

In most cases, a person does not realize the effects prolonged standing is causing until the damage is pronounced enough to cause significant harm. Health difficulties caused by standing become more obvious with aging. Debilitating diseases from years of standing subtract from the quality of life one might otherwise have.

Here are some of the symptoms and conditions associated with jobs in which the worker is required to stand.

- low back pain
- stiffness in neck and shoulders
- immobilization/locking of joints
- swelling in feet and legs
- painful feet and legs
- orthopedic changes to the feet, including flat feet
- heel problems, including plantar fasciitis/heel spurs
- Achilles tendonitis
- bunions/corns

- arthritis in knees and hips
- problems in pregnancy and birth defects
- high blood pressure
- heart and circulatory problems
- restricted blood flow
- varicose veins²

Some of the conditions listed above can worsen if neglected. Early treatments are usually less drastic and can provide better results.

Chapter 2

Back Pain

Prolonged standing is a major cause of back pain. Statistically, of all the work-related disabilities in the U.S., back pain is number one. Aside from the common cold, it is the main reason most workers under 45 miss work. Back pain is the leading cause of disability for workers between the ages of 19 to 45.³

The weight of your body and the time you spend standing affects the degree to which gravity squeezes your joints. The lower the body part, the more compressed it will be by the weight of the other sections above. Feet are in the worse position, having to accommodate the most compression.

When a standing person begins to tire, they create stability by locking their ankles and knees. They remain in a fixed position. Postural muscles become stressed as they work to maintain a static standing posture. When a joint is compressed and locked and when there is unmitigated muscle contraction, it hinders circulation of nutrients and oxygen and the removal of waste products. This causes a gradual breakdown and deterioration of tissues. In compression of a joint, fluids which nourish the joint are squeezed out. The joint suffers malnourishment and weakens. Wear and tear sets in and a diseased joint, especially arthritis, is the result.⁴

One example of injury due to prolonged standing is compression of the spine. As pressure is put on the spine from uninterrupted standing, fluid is squeezed out of the intervertebral disks. Cartilage breaks down. The vertebral disks lose their shock absorbing abilities. Ligaments and muscles that helped stabilize the spine become compromised by the formation of small stress tears. Tendons lose their lubricating abilities. The nerves that emerge from the spaces between the vertebrae become compressed. One thing leads to another in the interconnected workings of the body. Loss of height is only a telltale sign that there are serious problems.⁵

When examining those with height loss, MR imaging shows narrowing of the neural foramen and central canal along with bulging of the intervertebral disks.⁶ Studies of men have shown the risk of death increases with height loss of 3 cm (1.181102 inches) or more. In both men and women, significant height loss can affect digestion and breathing.⁷ Spinal root compression can cause numbness, sciatica and general weakness including that of the bladder and bowel.⁸

It should also be noted that less common causes of back pain are cancer, fibromyalgia and shingles.⁹ Also, it is not unusual for back or hip pain to be due to bone loss. (Note: it is rare for a child to complain of low back pain and doing so can be indicative of a serious pathology.)¹⁰

When trying to locate the cause of back pain, aside from tapping into your intuition, try some simple changes. The bodyworker's back pain could be caused by something as simple as working with a table too tall or

too short. It could also be caused from using techniques that do not suit their frame. It might even be just the shoes they wear. If any of these are the cause, this can always be modified.

Luckily, massage tables are adjustable now. However, if the table you are using happens to be homemade, you can add extra padding to the table or put blocks of wood under the table legs to increase the table height. If the table is too tall, consider cutting the legs down. If that's not possible, try thicker soled shoes or building up the floor around the four sides of the table with removable padding or platforms. To find out if a technique is causing you pain, try eliminating each technique separately for a couple of weeks then see if you feel an improvement. (Shoes are discussed further on.)

Back Pain and Danger Signs

The American Academy of Family Physicians says that a person may have a more serious problem and should call a doctor if they experience the following:

1. Pain going down the leg below the knee
2. A numbing in the leg, foot, groin or rectal area
3. Fever, nausea, vomiting, stomachache, weakness or sweating
4. Lose of bladder or bowel control
5. An injury

6. Intense pain that prevents movement.

7. Pain that does not improve after 2 or 3 weeks¹¹

A Brief Discussion on Osteoporosis

Back pain and loss of height can also be caused by osteoporosis which is common in the Western culture. Osteoporosis is marked by weak, porous and brittle bones which become prone to fractures. This is a result of the body's inability to absorb, utilize or maintain bone building minerals.

Most of the osteoporosis fractures that cause back pain don't occur in the lower back. The lower back is where the work of maintaining posture is concentrated and the back pain from prolonged standing is usually felt. Most of the osteoporosis fractures are located in the middle and upper back. If you are a woman with back or hip pain who is premenopausal or postmenopausal you are at high risk for osteoporosis. Consider having a checkup to rule out the possibility of osteoporosis.

There are many things that can cause bone loss: a hyperthyroid condition, thyroid drugs, smoking, diabetes mellitus, anti-seizure drugs, some diuretics¹² and an excessive intake of Vitamin A are some examples.¹³

One of the dangers of osteoporosis is hip fractures. A hip fracture is so serious that about 24 percent of people over 50 who get them die within 12 months. This

is reported to be due to either complications related to the injury or the long period of disability.¹⁴

There are things we can do to build bones naturally. Jumping on a mini trampoline for 20 minutes a day is said to build bone tissue.¹⁵ Weight bearing exercises is another technique. Walking is highly recommended. Currently promising research is being done at NASA with subtle low intensity vibration as a possible stimulant to bone tissue building.¹⁶

Chapter 3

Stretching, Flexibility and Posture: Conditioning for Prolonged Standing

Stretching first thing in the morning before getting out of bed and throughout the day is great. It will go a long way in keeping you hearty and relieving the stress of prolonged standing. Stretching exercises keep joints and muscles supple. It eases muscle tension and improves circulation.¹⁷ Stretching is a form of body strengthening; a stiff, compressed body is a weak body. Cats have several reasons for digging their claws into furniture. In part, it is in response to stress. Also they are strengthening and stretching their bodies and it feels soooo good. Luckily that is the way it is with stretching; after doing it on a regular basis, it becomes addictive because it feels good.¹⁸ Bouncing during the stretch should be avoided because it can tear muscles.¹⁹ The Mayo Clinic says regular stretching is a powerful part of any exercise program.

Benefits of stretching, compliments of the Mayo Clinic:

- **Stretching increases flexibility**
- **Stretching improves range of motion of your joints**
- **Stretching improves circulation**
- **Stretching promotes better posture**
- **Stretching can relieve stress**
- **Stretching may help prevent injury**

We need flexibility and range of motion just to get through the day. We need it to put on our shoes without props, to pick something off the floor, climb stairs, lift large awkward objects and to work with odd angles, as when cleaning the bathtub. A person without flexibility and range of motion may find it more difficult to bathe. It may become necessary for them to depend on someone else to cut their toenails. Personal grooming can slack off in a world of too busy and too stiff.

Flexibility promotes good posture. Keeping weight down and maintaining good posture lessens pressure on joints. Stretching increases circulation to keep nutrients and oxygen flowing through the body which helps repair damaged cells. Stretching improves posture by releasing tight muscles, helping a person to stand relaxed and tall and not crumpled and twisted into a tight achy little ball. Stretching relieves emotional tension. If something is bothering you, just stop and stretch out your arms and chest, yawn like you're bored and the bugaboo is put into perspective. Frequent stretching minimizes aches and pains and helps prevent injuries.

Too often we take it for granted we will pirouette through life without having to work for it. But when we look at older people, we usually see some drawbacks. Most have lost coordination, flexibility, balance and strength. They often suffer from skeletal and circulatory problems. They could easily fall and break something (like a hip.) They don't stand as they did when they were young; they have the posture of the aging.

Everyone ages but surely some are going through it more spryly than others!

In the 70s I was taking medical assisting in downtown San Francisco. During break, students would hang outside and watch the masses. San Francisco is a small contained city, so you tend to see the same people over and over. There was one person in particular who intrigued us. The first thing you noticed about her is she had no economy of movement, as people acquire with maturity: arms swung and everything moved—her shoulders, even her hair. As soon as we would spot her, we would literally run to try to speak with her but always lost her; she moved so briskly. She sailed through the streets of the city like it was her launching pad, her feet barely touching the pavement. She's dead now. I know this because she had to have been at least 80 years old. That's right; the only part of her that aged was her face; even her hair was still luxurious. Her body, posture, movement, flexibility and energy made you think you were looking at a girl barely in her teens. It was a wonderful thing to see. It offered hope.

We unconsciously judge people's ages all the time without seeing their faces. Their posture and movement tend to tell us their age. But, as in the San Francisco example, it does not have to be that way. I don't know how she did it. Certainly she did a lot of energetic walking and may have had good genes. She probably did other things like stretching. She did something to keep her muscles toned. I think she was aware, vigilant and had intent. You can try it yourself. Go for a walk, be in your body and think about what it felt like when you

were a kid. Try to get that movement and posture back. It can be done but it cannot be maintained unconsciously; it requires intent.

When attempting the posture and movement of your youth, you might find: an uncooperative gait, feet falling awkwardly, all the stiffness and ailments that crept into your body while you weren't looking. Luckily, with a little determination, you may get back what you had.

We also have to deal with what we're served. I knew a woman who worked out every day all her life and stayed in excellent health into her 80s. Her spine was perfect; having none of those age changes in the skeleton that you see as people get older. Then she had surgery on one of her eyes and it was blinded. This caused her to become so disheartened, she stopped her workouts. As a result, her health deteriorated to the point she could not get it back. She often remarked how she wished she had not let the blinding of an eye depress her to the point of giving up.

Maintaining good posture does not mean being stiff, only that your body be aligned. To find good posture, imagine there is a line across the top of your chest at the level of your armpits. Stand at least 10 feet from the wall. Line up that imaginary line with the line where the top of the wall meets the ceiling. Now shrug your shoulders up and back. Let them drop and relax. Make sure the lines still match up. Your body should be relaxed and you should be standing straight. Make sure your ears, shoulders and hips are aligned and your neck tall. Don't go through the day just a floating mind; be in

your body so you can listen to it. It will tell you when you are doing something wrong.

Here are some posture tips from the Mayo Clinic:

1. Hold your head up straight with your chin in. Do not tilt your head forward, backward or sideways.
2. Make sure your earlobes are in line with the middle of your shoulders.
3. Stretch the top of your head toward the ceiling.
4. Keep shoulders back, knees straight and back straight.
5. Tuck your stomach in. Do not tilt your pelvis forward.
6. The arches in your feet should be supported.²⁰

Try this posture fixer from Bruce Thomson.

Stand Tall, Walk Tall - Start Position

1. Like all Pilates exercises, do this barefoot!
2. Imagine that there is a buoyancy balloon in your head located above and between your ears. Let the balloon elongate your neck away from your shoulders. Feel the back of your neck elongate & your chin tuck slightly.
3. Anchor your scapulas.
4. "Attach" an imaginary weight to your tailbone. Your spine is now elongating between a weighted tail bone and a "lighter than air" skull. Your back still keeps its natural curve. Your pelvis should be in "neutral".

5. Gently zip* and hollow your lower abdomen.
6. Gently engage your Gluteus maximus muscles
7. Unlock your knees, and check in the mirror that the knee caps are not pointing inwards.
8. Place your feet hip width apart with the insides of your feet parallel.
9. Let your foot arches form by pushing your toes & the balls of your toes firmly toward the ground.²¹

[* Zip, a Pilates term, is like pulling the abdomen in to zip up tight jeans. Drop the chest, pull in abdominal muscles and engage the pelvic floor. It should feel like you're bringing everything to the center line.]²²

--© Bruce Thomson, *EasyVigour*
<http://www.easyvigour.net.nz>

Have a friend watch and give you feedback on your posture until you get it right. Then note how that feels so you will know when you're in good posture. It may even feel strange at first; however, it will feel better as you relax. This will also help you to see where your body needs strengthening. If it does not feel "right," you may have a weak area or lapsed into bad posture to the point your body is fixed to it.

Here is some information about the benefits of maintaining good posture from the Mayo Clinic.

1. Keeps bones and joints in the correct alignment so that muscles are being used properly
2. Helps decrease the abnormal wearing of joint surfaces

3. Decreases the stress on the ligaments holding the joints of the spine together
4. Prevents the spine from becoming fixed in abnormal positions
5. Prevents fatigue because muscles are being used more efficiently, allowing the body to use less energy
6. Prevents backache and muscular pain²³

Chapter 4

Pilates and Weight Training

Pilates combines flexibility with strength. All this helps condition the body for prolonged standing. Pilates particularly focuses on the core postural muscles: abdomen, lower back, hips, and buttocks. This supports and aligns the spine, improving posture. Concentration is needed to control muscles during the movements; hence, Pilates has also been called "Controlology." Pilates improve breathing and fine tune a person's balance. Pilates is excellent for fighting the problems associated with aging, like having to hold on to something to put on underwear.

Pilates founder Joseph Pilates designed it to be corrective in nature. Physical therapists incorporate Pilate's exercises.

Pilates is not known for building the muscle mass weight lifting does although many weight trainers incorporate Pilates, especially for abs. People who practice Pilates tend to have bodies that resemble dancers. Weight lifters usually bulk up more.

When I was bodybuilding I could stand for long periods without a problem. Weight bearing exercises are one of the fastest ways of building muscle and bone tissue. Muscle mass burns fat, so the more muscle, the easier it is to burn fat. Weight bearing exercises work because muscle and bone tissue form

to meet the demands for additional strength. This comes from challenging the body to lift greater weight. Weight lifters might do upper body one day and lower the next to give muscles time to rest. Abdominal exercises can be done every day.

If you're not accustomed to lifting, a trainer is needed at first to make sure you don't hurt yourself. A good trainer will show you how to get the best benefit from your workout. Since finding a good trainer is key, the best thing to do is watch trainers with their clients. You want someone who is picky about the subtleties of form. Avoid a trainer who lets their clients slop around on the equipment, possibly hurting themselves while they make small talk. A good trainer's main goal is to transform their client's body. Therefore, you will see them encourage extra reps from their clients if it looks like they can get them. Another thing... the condition of the trainers body is her/his credentials. If they don't know how to get it for themselves, they will not be able to do it for you. If they hide under bulky clothes instead of showing off, you may well wonder why.

You could apply some of the same system for identifying a good weight trainer to finding a Pilates instructor. The terms Pilates is not protected by law so someone calling themselves a Pilates instructor does not mean they are especially qualified.²⁴

Chapter 5

Pes Planus (Flat Feet)

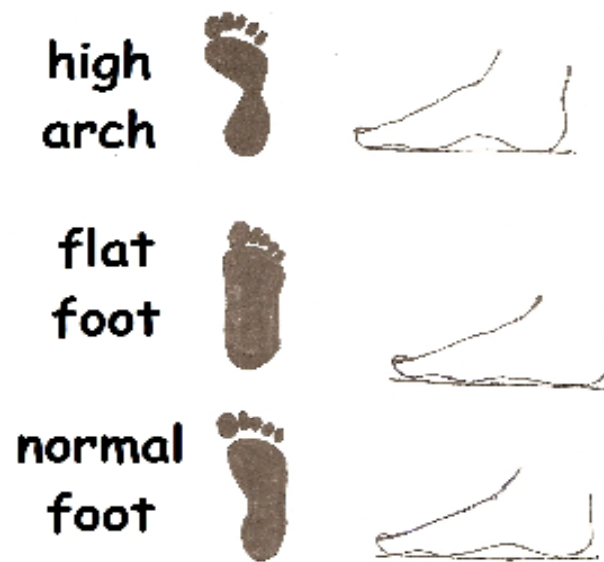
Chronic inflammation from prolonged standing can cause scar tissue and alterations in the boney structures of the feet. This can lead to fallen arches, also known as flat feet and pes planus. Fallen arches can cause shin splints, Achilles tendonitis, plantar fasciitis²⁵ and changes in the alignment of hips and back. Painful hips, knees and back can be traced back to flat feet. The resulting conditions from flat feet subtract from the ease of walking in later life. It is important to catch foot problems early by paying attention to the condition of your feet. Age 50 is the approximate age people start complaining about foot problems.²⁶ This suggests there are orthopedic changes in the feet way before that, which they were probably shrugging off.

There are two types of flat feet: rigid flatfoot and flexible flatfoot. With rigid flatfoot, you can see the foot is flat by raising it up and looking at it or when standing, you can see it is flat. But with flexible flatfoot, you could have fallen arches and not even know it. With flexible flatfoot, the arch only disappears when standing.²⁷ In other words, you could be lying in your bathtub admiring your arches that aren't really there. Also a person does not always detect a change in their feet until the change become quite pronounced.

There are ways you can check for flat feet. Wet your feet and walk on a dry surface. A normal adult footprint has a wide band connecting the ball of the foot to the heel, with an indentation on the inner side of the foot. If you have flat feet, you will see a nearly complete foot imprint, with almost no inward curve where the arch should be. This is because the arch is collapsing and more of the bottom of the foot is making contact with the floor. A foot with a high arch has a large indentation and a very narrow connecting band.²⁸

Other indications of flat feet are:

1. achy feet
2. stiffness when trying to move around the heel or midfoot
3. finding it difficult to stand on your tiptoes
4. too many toes showing from the back
(Usually if someone is standing directly behind you, only the fifth toe is visible)²⁹



Most young children naturally have flexible flat feet. The arch develops later when the tendons become stronger and tighter.³⁰

An orthopedic doctor would know when flat feet are natural and when there is an underlying problem. For example, a child might have tarsal coalition. With tarsal coalition, two or more of the bones of the foot are fused together. This limits motion and eventually will develop into flat feet. One way to tell if a child is pronating is to look at the wear patterns on their shoes. Also if you place a pair of their worn shoes side by side and they lean towards each other, it indicates the child is pronating.³¹

Sometimes one or both calves of the flat footed person will hurt. This is because a healthy foot supinates in the later stage of the step when the heel leaves the ground, relocking the bones of the mid-foot for push off. (The bones are not continually locked in because they are designed to adapt to uneven natural terrains and even to climb trees.) When the bones cannot lock-in to complete the step, because of weak arches or other damage to the boney structures, the foot cannot properly supinate. The calves must pull up the slack and work harder to propel the body forward. This explains why flat feet can cause shin splints. When calf muscles work harder, they develop too much in relationship to the anterior muscles. Stress is put on the anterior muscles from deceleration of the body at heel strike, causing pain where the anterior muscles attach at the bone.³² If a person has been diagnosed with rheumatoid arthritis, they stand a 50 percent chance of developing flat feet.³³

The arch serves as a shock absorber. High arches are particularly problematic in this area because they tend to be too rigid to absorb shock well. When there is inadequate shock distribution from dysfunctional arches or improper development of the forefoot, it increases pressure on the joints. These joints are also more likely to become arthritic because arthritis sets into damaged joints.

Alterations of the boney structures of the feet can cause imbalances in the hips and knees.³⁴ Without a proper arch, your knees and hips can change position and your entire alignment can be thrown off. If you suffer from problems in knees, hips, ankles, feet or spine, check

for fallen arches.³⁵ Even a slight hyperpronation has been known to cause considerable neck pain.³⁶

Remedies

Surgery for flat feet is considered a last resort. With surgery, sometimes the bones don't heal right and you're worse off. Another treatment is prolotherapy, where a substance is injected into a tendon or ligament causing localized inflammation.³⁷ The inflammation stimulates the body's healing mechanisms which then forms new collagen. When the collagen shrinks, the ligament and/or tendon (which are formed from collagen in the first place) become stronger, reinforcing the arch.³⁸

Strengthening the foot through proper barefoot walking might be helpful in restoring the arch. In barefoot walking, make sure the surface is not hard and flat as this may only hammer already problematic feet. Choose natural surfaces which are textured like grass, dirt and sand. Pebbles are good for strengthening gluteus maximus muscles.

For those that who have not had the opportunity of developing good feet, there is the possibility that your feet may already be breaking down. They may be unable to handle long bouts of walking barefoot. In that case, shorter bouts at first may be a better idea.

The American Orthopaedic Foot and Ankle Society recommends walking on loose sand. They say this is an excellent way to exercise and strengthen feet.

Going barefoot has its own problem. The South in the early 20th century was largely barefoot and thus susceptible to hookworm. The disease caused retardation and stunted growth. The Rockefeller Foundation bought shoes and practically wiped the disease out. Hookworms and roundworms burrow through the skin making a cut or other opening unnecessary.

Roll a golf or tennis ball under the ball of your foot when just sitting around. Massage your feet and calves to prevent cramps. Then put separators between your toes and squeeze for about 5 seconds; release. Picking up marbles with toes and placing them in a bowl is good for those with hammer toes, ball of foot pain and toe cramps. If you want to start out with something easier, you can practice picking up a towel with your toes, which helps the same areas as the marble pickup.³⁹

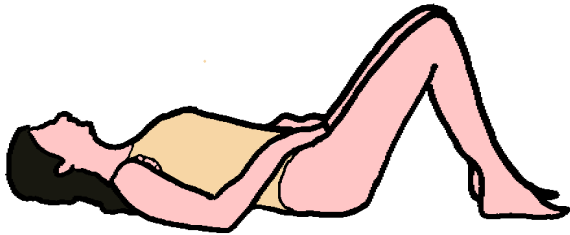
The following two exercises with comments are courtesy of Bruce Thomson at <http://www.easyvigour.net.nz>

Pointing and Flexing the Foot Exercise

Start Position

Do this exercise either sitting or lying down in the Relaxation Position with one knee lifted.

Pilates Relaxation Position



1. Use a comfortable mat or carpet.
2. Support your head with a folded up towel or bath mat, about 3 cm thick.
3. Keep your feet and knees in line with your hips, or a little wider if that is more comfortable.
4. Place hands on abdomen (see diagram) Take a deep breath, hold, then release it slowly.

| | |
|---------------------------------------|--------------------------|
| Flexing and Pointing the Foot: | |
| Start Position | |
| | |
| Action: | |
| Flexing the Foot | Pointing the Foot |
| | |

Pointing the Feet:- Action

1. (Keeping your foot strictly in line with the ankle knee and hip joints): Point the foot away from you.
2. Repeat slowly, five to 10 times each foot.

Flexing Feet:- Action

1. (Keeping your foot strictly in line with the ankle knee and hip joints): Flex the foot, this time letting the heel push away from you, and the toe end of the foot come toward you.
2. Repeat slowly, five to 10 times each foot.

Comments

The wheels on your car have to stay balanced and aligned for optimal function. The same applies to your feet!

Watch Points

- Don't point so hard that your feet start to "sickle" inward!
- Don't flex so hard that your toes are curling toward you!

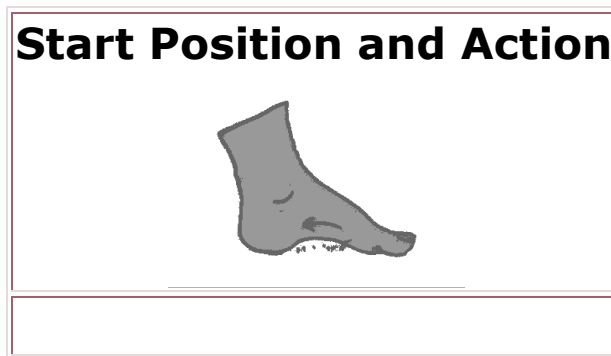
What it does

- This exercise teaches the ankle and foot to move "in line". Any tendency to buckle to the side (as for example in twisted ankle) is reduced.
- Pilates exercises often include instructions to point or flex the foot, so it is worth while to learn what these terms actually mean! ⁴⁰

Arching the foot Exercise

Arching the Foot:- Start Position

1. Do this sitting or standing. Take your shoes and socks off and get comfortable.
2. Place your feet on the ground with the inside edges parallel to each other.



Arching the Foot:- Action

1. (Keeping the balls of your toes on the ground and your toes long and relaxed): Draw the balls of your toes back towards your heels, thus forming the arches.
2. Hold and release.
3. Repeat 10 times.

Comments

We don't wear boxing gloves on our hands all day, but this is exactly what we do to our feet! The feet are actually incredibly complicated!

- The feet have about 33% of the number of sensory nerve endings that the hands have. Not as many,

but still an incredible number. The sole of the foot has approximately 50 named muscles grouped in four layers!

Watch Points

- Don't screw your toes up. It is the arches of the foot that you are working on.
- Make sure that all five foot arches are forming and that the foot does not roll in or out.

What it does

The author [Bruce Thomson] has argued elsewhere that shod feet are responsible for many of the musculoskeletal ills of modern western civilization (2). Just two comments will be made here:

- Orthotic inserts are used (quite successfully) to treat a variety of musculoskeletal conditions. If the foot could use some of its 50 or so muscles to form the natural arch for itself, there would be less need to rely upon shoe inserts.
- Try forming the foot arch as hard as you can while walking bare foot! The author [Bruce Thomson] guarantees that your Gluteus maximus will strongly engage as your arched foot makes contact with the ground! Gluteal maximus recruitment is poor in modern civilized man, with disastrous consequences!

⁴¹ © Bruce Thomson, EasyVigour Project

http://www.easyvigour.net.nz/fitness/h_gluteus_max_back.htm

Chapter 6

Shoes, Socks and Supports

What is it with these shoes that in no way resemble the shape of a foot? What child was ever born with pointy feet? Why don't shoes have individual sections for each toe? Is it any wonder people suffer from pointy feet and toes looking in all different directions, bunions, hammertoes and mallet toes?

Dr. Bernhard Zipfel, a podiatrist and University Curator of Fossil Collections, and Professor Lee Berger, of the Institute for Human Evolution and the Bernard Institute in the School of GeoSciences, conducted an extensive foot study. They examined present day Sothos, Zulus and Europeans and skeletons more than 2000 years old. Doctor Zipfel and Professor Berger concluded wearing shoes caused more boney pathologies, especially in the metatarsal region, than going barefoot. They found that especially true when shoes were introduced at an early age.⁴²

"Footgear is the greatest enemy of the human foot," said Samuel B. Shulman writing in the "Survey in China and India of Feet That Have Never Worn Shoes." Concerning bare footed individuals, he said "The range of their foot motions are remarkably great, allowing for full foot activity."⁴³

A doctor once traveled the world and spent years examining feet to determine the cause of foot pathologies. One day he hit gold when studying a two-year-old. The child's feet were starting to point outward in the "typical posture of a child with fallen arches." Because the child had exceptionally wide feet, the doctor suggested the mother leave him barefoot.

After a summer, the child's fallen arches were completely cured without any intervention by the doctor. The doctor realized that by going barefoot the boy's feet were allowed to develop naturally. His feet were no longer turned outward for balance. His feet were able to grow and spread now that they weren't hampered by shoes. His toes and forefoot became broader and stronger. Instead of balancing on his inner arches and using them to push off at the end of each step, his toes could spread out for walking and standing. He now had a broad forward area to support his weight.⁴⁴ (I always wanted to have good sturdy Hobbit feet that I could bounce around on.)

Based on the doctor's discovery, adults who have spent most of their time barefoot as children should have strong feet with uncontaminated boney foot structure. They should experience less of the physical problems associated with fallen arches. This assumes of course they did not damage them later by wearing bad shoes. Since we cannot always be barefoot, we need to make sure we are not letting shoes dictate the condition of our feet and movement.

Researchers claim shod citizens of industrialized nations do not fully engage gluteus maximus muscles

when walking because they tend to stiffen their knees. As a child, I saw a Jimmy Stewart film, *Mr. Hobbs Takes a Vacation*. It contains a hysterical hiking scene where Stewart's boss (played by John McGiver) shows him how bending the knees help in shock absorption. He does an exaggerated bending knees walk that the long legged Stewart has to imitate. I do a slightly more subdued version. Intentionally bending the knees is less stressful than stiffer legged walking and you can walk all day without tiring. The heel does not strike first, instead more of the foot makes contact at once.

Not properly engaging the gluteus maximus muscles to support walking leaves them underdeveloped. Underdeveloped gluteus maximus muscles causes sway back and serious problems in the spine, hips and lower legs. There are shoes on the market now that promise to build gluteal muscles and eliminate pain. The ads for these shoes refer to them as similar to walking barefoot. So we can see shoe manufacturers making the connection between bare feet, gluteal development and skeletal integrity.⁴⁵ Runners from other nations who compete barefooted have made us more aware of the benefits of going barefoot.

But since most of us will have to wear shoes some of the time, finding a good shoe is important. Ultimately, shoe brand selection is a personal experience. You can probably get some decent referrals from others. However, you will still need to experiment and find a good shoe that works for you. In order to not waste money, be sure to test drive the shoes at home with a guarantee that you can return them if unsatisfied.

The average person takes 7000 steps a day. A study of 200 men and women whose activity varied showed that men averaged 7192 and women 5210.⁴⁶ If your job is on your feet, you are probably doing more than that. Seven thousand "step shocks" per day translates into an accumulative 800 tons of impactive body weight daily for the average person.⁴⁷ This would not be as bad if you had good strong feet and legs and walking surfaces were natural and uneven. The unevenness would help keep your knees flexing for balance and to reduce discomfort. This would insure blood flow to the legs. But generally most surfaces Americans walk on today are abnormally hard and flat.

Concrete is one of the worse surfaces. Under those conditions, some kind of cushioning at the bottom of shoes becomes desirable. Selecting comfortable shoes that allow as much natural motion as possible would be helpful. Make sure there is room in the toe box. Feet tend to get flatter and require a larger shoe size as we age so make sure you're not attached to a number. Also the fat pads at the bottom of the feet tend to shrink. Wear good comfortable shoes that offer proper fit by matching closely the natural shape of the foot. Shoes used to be made with an obvious arch which fit the natural arch of the foot. You looked in the shoe and there it was! The ones they have now are barely noticeable.

Shoes should be flexible and give so you can get some movement going and increase circulation.⁴⁸ Ankle and shin muscles struggle with inflexible shoes, causing

legs to tire. Inflexible shoes cause knees to lock during walking. This causes stress on the back of the knees and hips and ultimately the rest of the body.

Here is some advice from Wendy Bumgardner, a certified marathon coach, on how to determine if your shoes are flexible:

Twist them: Grab the shoe with both hands and twist in opposite directions. It should twist a little.

Bend them: Try to bend the shoe in half, pushing the heel towards the toe. The shoe should bend at the ball of the foot. Some running shoes bend in the middle of the arch, which is not the right place for walkers.

Poke them: Place the shoe on a level surface. Poke the toe down, the heel should rise up off the surface.⁴⁹

Shoe Shapes: Curved, Semi-curved and Straight

Did you know you might be buying the wrong shoe shape for your feet? Learn how to match foot shape with shoe shape. For example, when you choose one brand of jeans over another, because they fit better, it is because the model that designer uses has a shape closer to your shape. Something similar is happening in shoe manufacturing. When you know your foot shape, you can match it with the manufacturer who uses a similar "model." To find your foot shape, first draw an outline of your foot by standing on a sheet of paper and tracing it. Next, draw a line straight through the traced foot, bisecting the heel straight through to the toes.

A line that runs through the first two toes means you have a straight foot.

A line that runs through your middle toe means you have a semi-curved foot.

A line that runs through the last two toes means you have a curved foot.⁵⁰

Once you know your foot shape, you will want to purchase shoes that fall into your foot shape category. You can take the paper cutout of your foot when shopping for shoes. There are three corresponding shoe shapes: straight, semi-curved and curved. The shoe manufacturer uses a last (a form in the shape a foot on which shoes are shaped)⁵¹ with one of those three shapes. By looking at the bottom of the shoe, you can determine which shape last they used. You can put the bottom of your foot, or your paper cut out, up against the bottom of the shoe to see if the shapes match. Even if you bought the "right size" shoe, if the shape is wrong for your foot, it is the wrong fit.

Curved last: If a thin strip connects the heel and ball of the foot, it is a curved last. This shoe works well for people with a high arch. It is light and flexible. It encourages the inward movement of pronation so it is not recommended for a hyperpronator.

Semi-curved last: If a shoe has a wider strip connecting the heel and ball of the foot, it is considered a semi-curved last. It is more stable than the curved last. It works well for people with normal arches.

Straight last: Straight lasts are the least flexible and the most stable and work well for people with flat feet because they need the extra support.⁵²

You notice that the foot print matches the correct last. A straight lasted shoe may not have the toe room for a person with a curved foot, and a curved last may not have enough toe room for a straight foot. There may not be enough toe room because of the mismatched shapes. Examine your old shoes. If any of the upper part of your shoe is hanging out over the base of the shoe on one side, your shoe may not have the right curve to match your foot. If the upper is hanging over the lateral side, your foot may be too straight for the curve of the shoe. In this case you might notice some wear where your little toe was pinched. If the upper is hanging over the medial side, then your foot may be too curved for the shoe. But more commonly the upper hanging over the medial side it is a sign of hyperpronation. Generally examining your shoes will give you a lot of clues about what is going on with your body.

Tips for Fitting Shoes

Foot size usually changes over the years so have your feet measured regularly. Be sure to measure both feet as one foot may be longer than the other. Fit to the larger foot. Stand during the fitting process and check that there is adequate space (3/8" to 1/2") for your longest toe at the end of each shoe. (Sometimes the longest toe is not the big toe.) Sizes vary among shoe brands and styles so don't be attached to a number. Judge the shoe by how it fits on your foot. The ball of your foot should fit comfortably into the widest (ball

pocket) of the shoe. Absolutely never buy tight shoes. Shoes should already be "broken in" before you buy them. Always walk around in the shoes before purchasing to make sure they feel "right" and are comfortable. Don't give up comfort for fashion. Your heel should fit comfortably in the shoe with a minimum amount of slippage.⁵³ (There are tricks to tying shoe laces that help chinch the shoe at the heel. These are discussed further on). The toe box should be wide enough that you can wiggle your toes.

Lighter weight shoes are generally desirable for most wearers. With heavier shoes you may suffer from lugging them around on your feet all day. I bought what I thought was a very comfortable pair of shoes but they were heavy. The burden of excess weight overcame their comfort and they stressed my legs terribly. Always try to find a light weight shoe. It will make a huge difference.

Try on shoes with the socks and any orthotics you intend to wear. If your arches are breaking down, you may need to make sure your shoes have a good arch support or buy arch supports separately and slip them into your shoes. This will help alleviate discomfort and show you what it feels like not to hyperpronate. Trying some of the inexpensive arch supports may do the trick. You can buy them for about seven dollars at drug stores. You will find other supports for the feet there as well. Arch supports are helpful in reducing the discomfort of bunions and, some doctors claim, preventing them from worsening. However, arch supports are not a cure.

Tips on Lacing Shoes

If you need a wide toe box but a narrow heel, try using two pair of laces for each shoe. Lace the bottom 3 eyelets with one lace and tie off into your bow. Then start the second lace from the next set of eyelets and finish as usual.

Another way is:

Lace from the bottom up as usual to the last two set of eyelets at the top of the shoe. Cross over to lace, skip the next to the top eyelet and hit the top eyelet instead, lacing it from underneath. Then thread the same lace into the next to the top eyelet directly below, leaving a loop of lace. Do the same on the other side. Then cross over the laces and thread into the loops and tighten and tie. This is called looped lacing.

If you have low arches you can loop lace the whole upper half of the eyelets. If you have wide feet, thread laces through the first set of eyelets and then straight up each side without criss-crossing at all. Continue this way for two or three eyelets. Once you've passed the forefoot and can tighten without squeezing, begin criss-crossing and finish lacing as normal. This keeps the toe box loose. If you have high arches, begin lacing as usual, stopping after the first set of holes. Then thread laces straight up each side, criss-crossing once at the top.⁵⁴ There are many other ways to lace shoes to create a particular effect. Experiment because you might come up with something even better.

Socks can be a problem. The stretchy nylon socks which fit tight around the toes or at the top part of the sock are bad for feet and legs. The tightness around the toes does not allow the toes to spread naturally. Tightness at the top of the sock can interfere with circulation. If you wear sandals without socks, your heels can become dry and cracked. This condition (sometimes associated with diabetes) can be remedied by wearing socks at least part of the time.

Remember the toe box should be wide enough that you can wiggle your toes. Wiggle your toes throughout the day to increase circulation and keep feet supple. An old trick used by waitresses is changing shoes a few times a day. The different shoes switch pressure to other parts of the feet. This tends to offer some relief to tired feet and legs.

At the other end of the spectrum, there is the high heel. It is said, the heel was originally designed for horsemen in the 1500s. The heel helped shoes from slipping out of the stirrups. They later became a fashion statement and, of course, got higher.⁵⁵

My sister lived in high heels from the time she was a teenager. Because of this, her Achilles tendons are now shortened. This is common for people who continually wear high heels. Now she can't wear low heels without her calves aching. High heels adversely affect feet, ankles, legs, hips and back. They throw your natural alignment out of whack.⁵⁶ In later life, wearers often develop osteoarthritis of the knees.⁵⁷

The American Orthopedic Society says to treat high heels as a “limited-privilege accessory,”⁵⁸ which suggests they are only okay for special occasions. People can be influenced by fashion trends, sometimes to their detriment. I use to live in Los Angeles, home of the movie stars. Take it from me, the high heels actresses wear in films bear no resemblance to the comfortable practical shoes they wear about town.

Any type of heel causes legs to angle forward. The even slight elevation of the heel in relation to the rest of the foot makes the body lean forward. The back has to compensate by arching backward, in order to keep the body from falling. Wear a pair of shoes without a higher heel, that are perfectly level, and you will realize how less hard your body has to work to stand straight. However, it may be uncomfortable for your back at first, considering all the years it has been compensating for the heel. It may feel like your heel is striking too soon.

Chapter 7

Plantar Fasciitis

Plantar fasciitis is a risk factor for those whose work requires prolonged standing and is a common ailment found in those with flat feet. Plantar fasciitis is inflammation of the plantar fascia (plantar aponeurosis).⁵⁹ Just as a reminder, the plantar fascia is that thick connective tissue that runs from the tuberosity of the calcaneus forward to the heads of the metatarsal bones. The plantar fascia supports the arch of the foot.⁶⁰ Planter fasciitis occurs when repetitive micro-tears in the plantar fascia overcome the body's ability to heal itself. Then collagen degeneration and inflammation sets in.

Plantar fasciitis is considered multifactorial⁶¹ (stemming from a number of different causes or influences.)⁶² Along with prolonged standing, and the aforementioned flat feet, anatomical risks are having heel spurs, limited ankle dorsiflexion,⁶³ high arches, and having one leg longer than the other.⁶⁴ Causes and influences are athletic running, aerobics, ballet dancing, being obese, pregnancy, aging, standing on hard surfaces, and shoes with poor arch support or stiff soles.⁶⁵

Plantar fasciitis is the most common diagnosis of under heel pain. Every year approximately two million Americans are treated for plantar fasciitis.⁶⁶ Plantar fasciitis can cause tightness and/or weakness from the feet to the knees including the Achilles tendon.⁶⁷ Pain is

most pronounced during the first steps in the morning before the foot has had an opportunity to stretch. But if plantar fasciitis is in a progressive stage, pain may be equally pronounced in the evening after regular activity. This is especially true after prolonged standing on surfaces such as concrete.

Cross-friction massage above the plantar fascia helps to alleviate the discomfort. There are various conventional treatments: night-splints, arch supports, changing shoe type, medications, surgery and sometimes just rest or stretching.⁶⁸

Orthopedic surgeon, Jonathan Cluett, recommends the following stretch for plantar fasciitis:

Towel Stretch

Sit on the floor with your legs stretched out in front of you. Loop a towel around the top of the injured foot. Slowly pull the towel towards you, keeping your body straight. Hold for 15 to 30 seconds then relax - repeat 10 times.

The following awareness exercise with comments is courtesy of Bruce Thomson at http://www.easyvigour.net.nz/fitness/h_gluteus_max_1eg.htm

Plantar fasciitis due to flat feet.

..... we need to be able to recognize the faulty posture-movement pattern that is the actual cause of plantar fasciitis:-

The Faulty posture and movement pattern that causes plantar fasciitis...

...is hip medial rotation (with or without hip adduction) accompanied by foot pronation (flat feet). Don't be put off by the technical description. The movement pattern is extremely easy to recognize! You could call it "knock knees". You can see it in the lower picture to the right.

Healthy Sit to Stand Movement:



Diagram Right:

Sit to Stand Movement with Gluteus maximus engaged and foot arches fully formed.

Pictures, Normal Feet:-

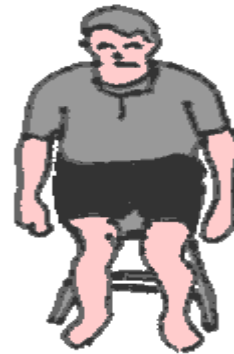


Diagram Right:

Sit to Stand Movement with the Gluteus maximus not engaged and the foot arches collapsing into Foot pronation. The medial (inside

Knock Kneed Sit to Stand Movement:

arches) of the foot are taking the weight. In plantar fasciitis, it is the ligaments on this side that become injured due to increased loading.



Pictures, Flat Feet:-



Conclusion regarding Plantar Fasciitis Treatment:

To avoid plantar fasciitis, and similarly to provide an effective plantar fasciitis treatment, you need to avoid "knock knees" during all stages of walking and running, and work on the strength and competence of the foot arch muscles and calf muscles. To avoid knock knees, your Gluteus maximus must engage at "foot fall" and during the sit to stand maneuver.⁶⁹

© Bruce Thomson, EasyVigour Project

Currently there is research using shockwaves called ESWT to treat plantar fasciitis. Extracorporeal Shock Wave Therapy is believed to stimulate healing by inducing microtrauma to the affected area, soliciting the body's natural healing capabilities.


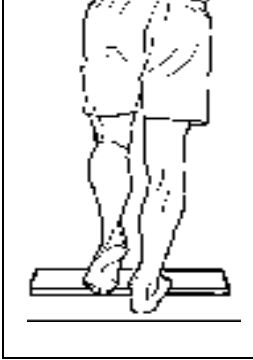
Chapter 8

Achilles Tendonitis

Achilles tendonitis is inflammation of the Achilles tendon. Achilles tendonitis is similar to plantar fasciitis because it is a risk factor for those whose job requires long periods of standing. It too is felt most acutely upon rising before the Achilles tendon area has had a chance to warm up. Achilles tendonitis most commonly occurs when the arch is compromised and the foot begins to over-pronate. Avoid overstretching the Achilles tendon as this can cause further damage. Dr. Pribut, DMP, recommends avoiding shoes with excessive cushioning or air filled heels if you suffer from Achilles tendonitis. With excessive air filled heels, the heel begins to sink as the leg and body is moving forward over the foot. This stretches the Achilles tendon.⁷⁰

Achilles Tendonitis Remedies

The following material is courtesy of Bruce Thomson at <http://www.easyvigour.net.nz>

| TWO UP ONE DOWN | | |
|---|--|---|
| <p>Start Position</p> <ol style="list-style-type: none"> 1. Stand at arms length to the wall, and place hands at shoulder height on the wall. 2. Stand on a one inch board if you have one. 3. Rise up on the balls of both toes with the knees locked. | <p>Action: "Down on One" (Exhale on the way down).</p> <ol style="list-style-type: none"> 1. Zip and maintain a long spine. 2. Lift the left foot off the ground & lower the right heel slowly. | <p>Action: "Up on Two" (Inhale on the way up).</p> <ol style="list-style-type: none"> 1. Place the left foot beside the right foot & push up on two. (Five times each Side). |
|  | <div style="text-align: center;">  </div> <p>Watch Point Work with a measured pace. Take time to feel the stretch</p> | <p>Alternatives</p> <ul style="list-style-type: none"> <input type="checkbox"/> Increase the load by putting a pack on your back. <input type="checkbox"/> If there is pain, and you need to load the calf muscles less, stand between two chair backs for support, and with the balls of your toes on one inch high block of wood |

What this exercise does

1. Works the second biggest calf muscle (the Gastrocnemius) muscle by “eccentric contraction”. Eccentric contraction is when you load a muscle that it is shortened, and then let it lengthen under that load. Working the calf muscle in this way is a proven method of fixing an Achilles tendonitis. It may also be a good method of treating trigger points in overworked calf muscles.

Benefits: Fixes Achilles tendonitis *

*(Quote from a local orthopaedic surgeon).

TWO UP ONE DOWN WITH BENT KNEES

Start Position

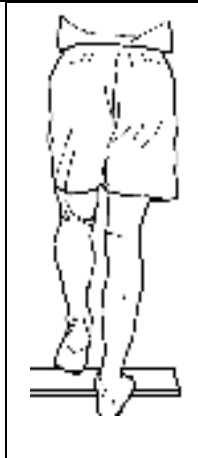
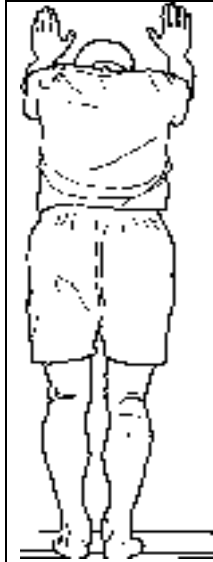
- 1. Stand at arms length to the wall, and place hands at shoulder height on the wall.
- 2. Stand on a one inch board if you have one.
- 3. Rise up on the balls of toes with the knees bent.

Action: “Down on One”

- 1. (Exhale on the way down).
- 2. Zip and maintain a long spine.
- 3. Lift the left foot off the ground & lower the right heel slowly.

Action: “Up on Two”

- 1. (Inhale on the way up).
- 2. Place the left foot beside the right foot & push up on two.
- 3. (Five times each side).



Watch Point
Work with a measured pace. Take time to feel the stretch.

Alternatives

Increase the load by putting a pack on your back.
:If there is pain, and you need to load the calf muscles less, stand between two chair backs for support, and with the balls of your toes on one inch high block of wood.

What this exercise does

Works the biggest calf muscle the (Soleus muscle) by "eccentric contraction". Eccentric contraction is when you load a muscle that it is shortened, and then let it lengthen under that load. Working the calf muscle in this way is a proven method of fixing an Achilles tendonitis. It may also be a good method of treating trigger points in overworked calf muscles.

Benefits: Fixes Achilles tendonitis "better than surgery".*
*(Quote from a local orthopaedic surgeon).

Supplementary Stretches for Pilates Matwork © Bruce Thomson 2007

Chapter 9

Heels and Toes

Heel Spurs

A heel spur is just that, a bone spur on the bottom of the foot, specifically where the plantar fascia is attached to the heel bone. The spur usually curls back towards the toe and is commonly detected by an x-ray. It hurts when walking, though sometimes heel cushions help.⁷¹

Approximately 70 percent of people with plantar fasciitis will be diagnosed with heel spurs after x-rays. However, approximately 50 percent of those with heel spurs do not have plantar fasciitis. What both plantar fasciitis and heel spurs have in common is that they can be related to occupations requiring prolonged standing. Heel spurs can also be caused by over stretching of the plantar fascia, sudden weight gain, obesity, bad shoes, gout, rheumatoid arthritis and hyperpronating.

Bunions

Bunions are associated with a weakened arch and uncontrolled prolonged pronation of the foot, creating a condition in which the first metatarsal deviates away from the rest of the foot. That may not be the only cause. Narrow shoes can also cause bunions. More women than men get bunions so it would seem shoes do play a part. Having one leg shorter than the other is suspected as well.

Certain foot types are more likely than others to get bunions. Some people think bunions are hereditary. But in actuality, whether or not one will develop bunions depends on foot boney structures, shape, alignment, resiliency and how these all work together.

Eventually arthritis may set in from the wear and tear caused by the misalignment of the big toe. The big toe may develop a condition called Joplin's neuroma, neuritis of the big toe. Sometimes bursitis develops because the body tries to cushion the pressure placed on the bunion by making bursae, or soft boney prominences, which then become inflamed.⁷² When a bunion forms on the outside of the foot at the little toe, it is called a Tailor's bunion or bunionette.⁷³

The American Academy of Orthopaedic Surgeons tells us that bunionectomy is one of the top 15 most common musculoskeletal surgeries in the United States.⁷⁴ If bunions are dealt with early enough, arch supports may stave off the need for surgery.⁷⁵ Professional treatments include ultrasound and physical therapy. There are devices that separate the big toe from second toe which are said to realign the big toe over time.⁷⁶ If surgery eventually becomes necessary, bear in mind not one surgery fits all. What the surgeon sees should determine the type of surgical procedure. There are many different surgeries being performed and they are improving techniques all the time. Personal research may go a long way in getting the best results.

Hammer Toes

Hammer toes are caused by structural changes in the foot. These structural changes lead to a muscle/tendon imbalance. Hammer toes appear as a bending or contraction of one or both joints of any of the toes except the big toe. Hammer toes can start off mildly but the sooner dealt with, the better. There are splints and other devices that can realign the toes. Orthotics may prevent hammer toes from worsening and simply changing shoes can bring about good results.

Once joint rigidity sets in, surgery may be the only option.⁷⁷ Like with bunions, hammer toes can appear to run in families. However, the real culprit is the inherited foot type with a propensity for structural failures. Hammer toes generally cause corns and calluses.

Part II

Chapter 10

Pregnancy and Prolonged Standing

It is recommended that a pregnant woman not stand or sit for more than two hours at a stretch.⁷⁸ The Japan Society for Occupational Health conducted a large control study in a Thailand hospital. They wanted to determine if prolonged standing was a risk factor in preterm births. Their research concluded that standing more than 3 hours a day throughout pregnancy “significantly increased the risk of preterm birth.”⁷⁹ Prolonged standing may also cause low birth weight and spontaneous abortion (which is another word for miscarriage.)⁸⁰ Excessive standing can also cause hypertension in pregnant women.⁸¹

Varicose veins are experienced by pregnant women more than any other group.⁸² Pregnancy not only can lead to varicose veins, it can cause existing varicose veins to worsen. The good news is varicose veins often improve after giving birth.

Progesterone levels increase during pregnancy causing the walls of blood vessels to relax as blood volume increases. This adds to the pressure on vein walls. As the uterus enlarges, it puts pressure on the inferior vena cava. This increases pressure on the veins of the legs. It is said that lying one’s back puts pressure on the vena cava⁸³ and lying on the left side takes pressure off.⁸⁴

Edgar Cayce believed that one mechanical cause of varicose veins was the weight of pregnancy and the position of the fetus. This caused pressure on the lumbar and sacral segments. The return of circulation from the lower extremities created “deflected circulation” and enlargement of the veins.⁸⁵ Cayce was not a medical doctor but he is mentioned here because his writings are favored by many in the natural health industry.

Whether pregnant or not, excess weight, especially around the hips and waist, prompts the development of varicose veins. Ways pregnant women can avoid varicose veins are discussed in the next chapter.

Chapter 11

Varicose Veins

Varicose veins are a form of chronic venous insufficiency. Chronic venous insufficiency is when the veins cannot pump enough blood back to the heart. The insufficiency can be caused from damaged valves in the leg or a blood clot.⁸⁶ Varicose veins are caused from a stretching of vein walls as a consequence of the wall's weakening.

The walls of the veins contain one way leaflet type valves which prevent blood from seeping back into the lower legs in response to gravity. When the walls of the veins stretch, the leaflets do not meet properly and blood is able to travel backward instead of being pumped to the heart.

It is the superficial veins that become varicose. The deep veins that are beneath the muscles do not become varicose. The contraction of muscles during walking provides a squeezing action on deep veins. The squeezing action helps pump blood out of the deep veins.⁸⁷

About 60 percent of the adult population will get varicose veins.⁸⁸ At the very least, varicose veins may be considered unappealing and may cause some minor discomfort. Legs may become swollen itchy, sting or ache.

On the other hand, varicose veins can produce a variety of more serious problems. They can lead to skin conditions such as dermatitis, or phlebitis (inflammation of the vein) and ulcerations.⁸⁹ Ulcerations usually occur around the ankles and serious blood loss can occur. Pressure should be applied to the bleeding area and medical attention sought immediately.⁹⁰

The skin may become discolored and darken because of waste products building up in the legs. This is called stasis dermatitis or varicose eczema.⁹¹ Pressure from swelling forces fibrin to seep out of small blood vessels located in the skin. The fibrin then collects around the blood vessels, not allowing oxygen and other nutrients entry.⁹² Brown and purple colorations form from a blood cell buildup in the skin. Skin may become shiny and thin.

Thrombosis (blood clot in a vein) cases have been related to varicose veins. A thrombosis is usually red and hurts. When the legs are elevated, the thrombosis is still evident.⁹³ According to the U.S. Department of Health and Human Services, a thrombosis may cause venous insufficiency if left untreated.⁹⁴

Signs of Varicose Veins

- Swollen, twisted clusters of purple or blue veins
- Swollen legs
- Swollen feet
- Swollen ankles
- Muscle cramps, soreness, heaviness or aching in the legs

- Soreness behind the knee
- Slow healing on legs and feet
- Eczema on legs and feet
- Itching around the vein
- Itchy skin on legs or ankles
- Leg muscles that tire easily
- Brown discoloration of the skin
- Ulcers⁹⁵
- Prominent dark blood vessels, especially in legs and feet
- Aching, tender, heavy, or sore legs, sometimes accompanied by swelling in ankles or feet after standing for any length of time
- Discolored, peeling skin; skin ulcers; and constant, rather than intermittent, pain are signs of severe varicose veins.⁹⁶

Contributing Factors to the Development of Varicose Veins

There are many factors that can contribute to the likelihood of developing varicose veins, many of them subtle and undetected. Additional stress on the legs can come from being overweight⁹⁷. The combination of obesity and standing for long periods is a double whammy on the poor legs. Mechanical traumas such as back injury are contributors. If varicose veins run in a family, especially if those family members are mothers or aunts, the risk increases.⁹⁸

If a woman is pregnant, she is more inclined to develop varicose veins, as mentioned earlier. Standing after

prolonged exposure to sun is said to cause varicose veins as well.⁹⁹ Physical deterioration from aging is a promoter of the disease.¹⁰⁰ Deterioration as a result of aging can lead to a breakdown or weakening of the overall body system leading to varicose veins. Loss of muscle tone and mass that accompanies aging fails to support vein walls. Prolonged standing is no friend to us as we age. We must keep moving and stay active but not perform tasks that keep us continually just standing.

Prolonged standing is a form of inactivity until you move those legs. Poor digestion, hormones, toxins and constipation has been associated with the development of varicose veins...constipation being a major culprit. Poor digestion increases toxins in the body which can cause a system breakdown.

Varicose Vein Treatments

There are a variety of treatments for varicose veins. Sclerotherapy, for example, is when a chemical or saline is injected into the vein, causing it to die. It then disappears by becoming absorbed by the body. Sometimes it is years before another varicose vein appears and sometimes, lo and behold, another comes to the funeral and you're right back where you started.

On the other hand, when varicose veins are surgically removed, the reappearance rate is diminished. Underlying conditions and the skill of the doctor play a part in that outcome. Recurrences may be indicative of injury or disease to a major vein from which the treated vein branched. If this potential exists, it can often be

determined ahead of time with ultrasonography. There is no need for anesthesia when having sclerotherapy.

Stripping is another option. This is where small incisions are made by which the varicose vein is pulled out using surgical hooks, called phlebectomy hooks.¹⁰¹ Either local or general anesthesia is necessary. Aside from the risk of general anesthesia, stripping can leave small scars, reduced feeling or numbness from the severing of nerves and cause a deep-vein blood clot. To help prevent the latter, the patient is given Heparin, an anti-clotting drug.¹⁰² Smaller varicose veins can be removed using small punctures instead of cuts.

There are other ways to remove varicose veins, including laser and radio waves. Here a catheter is inserted into the varicose vein and using laser or radio wave, the vein is closed. This is called ablation of the vein. This method can be used to close the main vein where the problem is generating. It is specifically used for the upper leg. In some cases, permanent numbing has occurred. In a small percent of cases, the procedure has caused deep vein thrombosis.¹⁰³

In advanced cases of ulcerations, a physician may do endoscopic vein surgery. This uses a thin camera to locate the vein. The varicose vein is then removed.¹⁰⁴ An epidural, spinal or general anesthetic is necessary for this procedure. Only about 10% of the blood circulation in legs takes place in the superficial veins where varicose veins occur. When varicose veins are surgically removed or destroyed, healthy veins will pull up the slack, taking on the job of the discontinued vein.

Chapter 12

Varicose Veins Prevention Methods

Most experts say yes, you can reduce the risk of getting varicose veins¹⁰⁵ while others disagree.¹⁰⁶ They all agree that there are things that one can do to prevent the severity. I think most bodyworkers would side with those who believe varicose veins can be prevented. The body as a living organism is constantly changing and in that process of change can be influenced surely.

Avoid Binding

Avoid clothes that bind and reduce circulation. Pay attention to how you're sitting and make sure you're not inhibiting circulation. Avoid crossing your legs...easier said than done for those of us who have spent a lifetime crossing our legs. Sometime the chair a person sits on does not suit them and they cross their legs for balance. This is especially true if the chair is too high. Propping one or both legs up is helpful. I find spreading my knees helps balance me when sitting and reminds me not to cross my legs. It isn't considered very attractive but neither are varicose veins and in private and among friends, it's no big deal.

Massage and Varicose Veins

Back when I was first taught massage, I was told never to massage varicose veins without a doctor's consent. Now there are different trains of thought on the subject. An article in *Massage Today* suggests massaging

varicose veins is a good idea in terms of moving toxins out of the affected area and increasing nutrition by increasing circulation. The article recommended lymphatic drainage and circulatory techniques and stressed using light flat palm or finger strokes. The more aggressive wringing and percussion are discouraged.¹⁰⁷

Suggested essential oils for massaging varicose veins are chamomile, cypress, frankincense, juniper berry, lavender and myrrh.¹⁰⁸ It is important to know what you're doing since undiluted essential oils can harm the skin.¹⁰⁹

Prevention and Relief of Varicose Veins Using Compression Stockings

Some people swear by compression stockings. Compression stockings are also believed to help prevent more varicose veins from forming. But I warn you, they are not for everyone. They are expensive (about 60 dollars and have to be replaced about every 6 months), hot and a bit of a struggle to put on. In some cases, you may need a prescription and they are not the prettiest things. But all things considered, they may be worth a try.

Compression stocking can be purchased from a medical supply store. They have to be fitted to the wearer. They should sit slightly below the knee and not feel tight in the knee area. The wearer should put them on before getting out of bed in the morning and raise each leg and not the trunk as they slip on the stockings. Your feet should not be lower than your trunk until you

have finished putting on the stocking. The object is to discourage blood from settling in the legs due to gravity, prior to getting on the stockings.

Compression stockings provide a “gentle squeeze” which helps send blood back up to the heart while putting compression on engorged veins and reducing swelling. They are used for both mild and severe varicose veins.¹¹⁰ Compression stockings are not to be used by anyone with a serious arterial disease.¹¹¹

Spider Veins are Not Varicose Veins

Varicose veins are not to be confused with spider veins. Varicose veins are usually larger than a quarter inch diameter; they tend to bulge, look twisty and are a very dark blue. Spider veins, which are at the surface, are small and thin and not as dark as varicose veins and they do not bulge. Spider veins are known to the medical profession as telangiectasias or sunburst varicosities. They do not typically cause a problem as they are not an essential part of the larger venous system. Spider veins can be treated cosmetically with laser¹¹² or sclerotherapy.¹¹³ There are some things that can be applied topically, such as vitamin K, witch hazel or horsetail extract which are helpful for some.¹¹⁴ I remember seeing waitresses massaging their legs with distilled witch hazel when they finished their shifts.

Note: the prominent veins on the hands are not usually a sign of varicose veins. In rare circumstances, venous obstruction of the arms can occur and the veins in the hands become abnormally large. However, prominent

veins in the hands are generally caused by loss of fat on the hands from aging.¹¹⁵

Hemorrhoids

Prolonged standing can cause hemorrhoids.¹¹⁶ Hemorrhoids are a type of varicose vein. They are swollen blood vessels around the anus. They can be found internally or externally. They are more prevalent with age. Common symptoms of hemorrhoids are:

- Blood in stool
- Rectal bleeding
- Blood on toilet paper
- Anal itching
- Anal swelling
- Anal lump
- Anal mucus discharge - less common
- Feeling of rectal fullness
- Feeling of unfinished defecation
- Severe rectal pain - if a vein becomes strangulated¹¹⁷

Note: It should not be assumed that experiencing one or more of these symptoms means the cause is hemorrhoids. A check with a doctor to rule out more serious diseases such as cancer is warranted.

There are things one can do to help avoid hemorrhoids. Don't sit on the toilet straining for who-knows-how-long. To avoid straining, keep stools soft by eating fiber and staying hydrated. Avoid junk, watch for food allergies by

keeping a food diary, and avoid overeating and spicy foods. Consider any supplements, medications or herbs as a possible digestion inhibitor. Reduce the things that cause you stress. When you feel the urge to go to the toilet, get in there and go; it is a natural function and we shouldn't have to apologize for it. A book is alright but only if it speeds things up: get in, do your business and get out; it is not a library. Exercise so your body is functioning properly. Walk. Avoid prolonged standing which can lead to hemorrhoids. Stay in touch with your body; know when it's time to give your feet and legs a break then follow through.¹¹⁸

Chapter 13

Chronic Heart Disorders

Chronic heart disorders are linked to prolonged standing at work. Recent studies suggest people whose jobs require prolonged standing run an increased risk of carotid atherosclerosis.¹¹⁹ According to research for ischemic heart disease risk factors, there is significant relationships between the amount of standing at work and atherosclerotic progression.¹²⁰ Carotid atherosclerosis is a buildup of plaque in the main arteries of the neck. This increases the risk of heart attack and stroke.¹²¹

Prolonged time in an upright posture at work may cause hypertension comparable to 20 years of aging. Blood pressure measures the force of blood against the arterial walls. Too much pressure (hypertension) can damage those walls. You want to keep blood pressure readings low. About 120 over 80 in a resting person is normal. High blood pressure is called the "Silent Killer." Don't you hate that? It is called that because in the early stages there are very few symptoms. People don't usually realize they have high blood pressure unless they get it checked. High blood pressure can damage vision and cause kidney failure, stroke and heart problems so it is not something you want to ignore. Checking blood pressure is important and, if it is high, you want to get it down before it does any serious damage. Besides avoiding prolonged standing, other ways to reduce high

blood pressure are getting weight down, reducing salt intake and exercising.¹²²

Chapter 14

More Ways to Save Your Body

Get Off Your Feet

The closer the body part is to the ground, the sooner that part will become adversely affected by prolonged standing. One of the most important things you can do is schedule time off your feet.

Fifty to sixty percent of North Americans spend 75 percent of their working day standing, compared to 30-40 per cent of Scandinavian workers, according to Dr Finn Tüchsen, of Denmark's National Institute of Occupational Health. The British are in trouble too. The Trades Union Congress said that many British workers are worse off now than they would have been in Victorian times. Employers are making workers stand when the job does not really require it. This is because they equate sitting and ergonomic accommodations with laziness.¹²³

It used to be common procedure for health and safety worker committees to meet with company representatives. Together they would hash out health and safety solutions for workers. Because of unions and federal regulations workers had clout. For prolonged standing, the solution might be installing seating that would allow workers to do the same job they were doing while standing. There would be other solutions like increased breaks from standing and job rotation.

In the later part of the 20th century, a wave of deregulation and stricter interpretations of existing regulations in North America led to a growing epidemic of job related illnesses.¹²⁴ Protections for the standing workers were greatly diminished.

Worker Safety under Siege: Labor, Capital, and the Politics of Workplace Safety in a Deregulated World, a book by Vernon Morgensen, explains that political trends have taken a position favoring corporate power over worker safety. Safety and health standards proposed by OSHA and MSHA (Mine Safety and Health Administration) have been withdrawn by the government. In this political climate of more and more deregulation the therapist may be increasingly responsible for their own safety.

I saw a foreign film where one of the scenes involved a supermarket. The cashiers were not standing. Instead they sat in chairs that swiveled as they slid the groceries through. The Swedes have it the best. Dr. Tuchsén says "only 19 per cent of men and 15 per cent of women aged 20-64 worked standing more than one-tenth of their day."¹²⁵

Pretend you're a Swede. Don't be mercenary with yourself. Be sure you have arranged your work pattern so you can get off your feet. Somewhere in the middle of the session you can switch to sitting by doing the feet, face or hands. Schedule breaks between clients so you can get off your feet and prop your legs up. If you can elevate your legs higher than your heart, all the better. According to the Cleveland Clinic, one of the country's leading heart institutes, you want to break away from

your work and elevate your legs at least twice a day for 30 minutes.¹²⁶ Yes, that is an hour of elevation during your work day. This is one of the benefits of our laid back profession and if it isn't, something is not right.

Think you need the money...you may always need money. Think you need to grab the business while it is there...it will come again. The thing to avoid is looking back later with regret at how you treated your most important asset, your health.

Movement and Mechanics

Movement is important to keep your blood circulating and save your legs. You must move when working. The therapist who just stands there bent, slaving over a body, is putting the job before their health. OSHA says "prolonged standing in a stooped position and repetitious side motions can contribute to low back injuries."¹²⁷ If you're going to be concentrating on a small area, either sit down or transfer your weight back and forth from one foot to the other by swaying. As you know from your anatomy studies, in the foot there are 26 bones, 19 muscles, 30 joints and 115 ligaments.¹²⁸ We are designed to be mobile. Be sure your knees are flexed so you aren't hampering blood flow.

If you watch professional dancers, you will notice they don't stay in one spot. They eat up space. Good body mechanics for massage therapists is a rhythmic dance where their body is in movement. When I first started learning massage, my instructor made all new students spend the first three weeks doing nothing but martial arts

lunges next to a vacant massage table...the horse and the archer stances. She said we first had to have proper body mechanics down before learning any massage techniques. Practical was from 8 am to 2 in the afternoon. Aside from the two 15 minute breaks and an hour for lunch, that was how long you pushed air and cursed yourself for taking the course in the first place. As it turned out, that was the best preparation I could have had.

Samuel Johnson said "The chains of habit are too light to be felt until they are too strong to be broken."¹²⁹ The way you move your body when you're working will become a habit hard to break so you want to correct any poor mechanics as soon as possible. If you belong to a gym, they usually have some mirrored walls. A large mirror would be a good way to check out movements. If you have a friend who is a therapist or to whom you have explained what to look for, they can watch you and offer pointers. Another thing you can do is watch a martial arts class as a refresher.

Your body mechanics are lacking if you find yourself:

- Slumping
- Locking your knees
- Twisting
- Overreaching

You should not be:

- Tilting your head
- Jutting out your chin
- Turning your feet inward

- Tilting your pelvis
- Collapsing your neck
- Continuously standing with your legs close together or locked¹³⁰

You know you are standing correctly if:

- Your earlobes are in line with the middle of your shoulders
- Your shoulder blades are back
- Your chest is forward¹³¹
- Your knees are flexed

Standing Surfaces

Foot problems associated with long periods of standing, hard flooring and wearing inappropriate shoes are severely aching feet, blisters, calluses, corns, rheumatism, arthritis, malformation of toes, fallen arches, bunions and sprains, according to the Canadian Centre for Occupational Health and Safety.¹³² Floors use to have a crawl space under them which gave them some give. Here in Orange County, California, suburbia seems to be made up of slab floored tract houses. Slab floors use to be associated with being poor. Now, slab floored multimillion dollar homes are built and no one bats an eye. But slab floors are very bad for the legs and feet. OSHA says "Prolonged standing on a concrete floor can contribute to lower leg and back discomfort that, over time, can develop into injuries."¹³³

If you work on a slab floor, carpeting with a thick pad would give you some cushion. Most commercial pads are not very thick so you will want to make sure you explain

to whomever you buy from that you want some good thick padding. If you work for someone else and they insist on hard flooring, bring in your own mats and use them. Cover them with rugs if they are ugly. When you say anti-fatigue mats, most people think of just rubber matting, however, anti-fatigue mats can be made of carpeting, vinyl, wood, cork and, in a pinch, cardboard. You usually see the wood, cork or rubber ones being used by cashiers and bar tenders and in restaurants. Whatever you get, make sure the edges are secured or point downward so you're not constantly tripping and moving them. Ask around to see which works better for your industry. Softer is not always better. You will want something strong with some spring.

Body Strengthening

Keeping your muscles well toned through moderate exercise is a way of preventing health problems. You can do exercises anywhere you happen to be. It doesn't have to be a premeditated hassle. Just grabbing some little exercises here and there adds up.

I know you have been on your feet all day but go for a walk in the evenings or other calm time. Strengthen your legs muscles. Get the blood pumping through your legs and oxygenate your circulatory system by breathing fresh air. Even if you think walking is not your thing, by doing it regularly, it will become habit forming. Plus it's free and you don't have to drive somewhere to exercise, like to a gym.

When muscles contract they help pump blood out of the legs, preventing blood from pooling in the lower

legs and causing varicose veins. Just be sure not to overexert your legs because you could damage the veins that way as well.

No time for the gym? Before gyms became mainstream, people (particularly men) did the same exercises every night in the comfort and convenience of their own homes: 100 push ups, 100 setups and maybe some chin ups. There are better crunches than regular setups but you get the idea. These guys were in good shape.

Rebounding on a mini-trampoline for twenty minutes is a very good addition to that routine.

The benefits of rebounding are:

- Helps normalize blood pressure
- Improves digestion and elimination
- Oxygenates the body by improving lung capacity and increasing red blood cells
- Builds stamina
- Helps firm muscles
- Strengthens immune system by increasing lymphatic circulation and freeing white blood cell production
- Lowers cholesterol and triglycerides
- Improves mood by releasing endorphins
- Stimulates cell rejuvenation¹³⁴

It is said to even build bone tissue. The impact is not as great on joints as say running would be.

Health through Dry Brushing

As a bodyworker, you may already be dry brushing. If so, here is a reminder of how great it is for you. If not, you have got to try this! Dry brush your legs to help them stay toned and increase circulation of both lymph and blood. Dry brushing aids in removing waste material from the body by stimulating the lymphatic system. This practice also increases cell renewal, diminishes cellulite, stimulates glands (including oil and hormone glands), improves digestion and strengthens the immune system.¹³⁵ Dry brushing has so many benefits that it affects the whole body.

Normally, a dry brush is a natural bristle brush which can be purchased from a health food store. The brush may seem harsh at first but your skin will soon get use to it. You may even seek a firmer more stimulating brush after a while.

Do your dry brushing routine before you bathe or shower. Start at the feet and working upward and toward the heart. As a bodyworker, this will come natural to you because it feels right. Taking 10 minutes here and there throughout the day and evening to incorporate exercise and do little things like dry brushing adds up. Soon you will notice your legs and feet looking and feeling better. You will feel healthier.

A Word about Supplements

There are a variety supplements that are said to help with vein health and build cartilage and bone mass. However tempting it is, depending on a whole slew of supplements and herbs may not pan out over the long

run. You may stop taking them after a while, especially because of the expense and inconvenience. I had a friend who took one supplement capsule every day for about 12 years. But that was all she took, the one capsule. Not such a big deal. You don't want to take a circus of supplements that you can't stick with. It would be simpler to find one or two good ones that actually work.

One of the most important things to consider when taking a supplement is whether or not it can be harmful. Horse chestnut is supposed to be a good supplement for varicose veins but its safety has not been proven for women who are pregnant. Venous medications containing extracts of horse chestnut are some of the most prescribed in Germany.¹³⁶ Yet it is contraindicated if you have kidney or liver problems.¹³⁷ Although a product may get good reviews, it is unwise to tax the liver. Before trying anything, it would be best to find out if it can cause another problem. In that case, it would be safer to find it in foods.

Even topical products can tax the liver when they are absorbed. Here is a website where you can type in a product, ingredient or company and they rate how harmful the product is. You can check on skin cream, soap, shampoo and other products; the higher the number, the more harmful the ingredients.
<http://www.cosmeticsdatabase.com/>

There are many supplements that supposedly influence health. What works for some people may not work as well for others. You would need to give whatever

supplement you try about a 3 month chance to prove itself.

While some supplements are helpful, some of the other ways of preventing varicose veins mentioned may have a greater impact towards health and they may be free as well.

Prioritize

If you have not prioritized time for taking care of yourself, it may help to de-clutter. De-cluttering means more than getting rid of excess material things; it also means not wasting time on inconsequential activities. Think clean spaces and a clearing of time. There are a lot of good books on de-cluttering. Some are straight forward and some not. I suggest you look them over and find the author that resonates with you because de-cluttering often requires encouragement.

Try attaching your healthful activities to something else, like the dry brushing attached to routine bathing. Some exercise could be attached to your sleep by doing it just before bedtime. People used to have a lot more control over their meals because they had a weekly menu, the chicken every Sunday kind of thing. Routine can be very powerful. Be creative and look for opportunities.

Summation

Prolonged standing can cause major health problems, including back pain, orthopedic changes (especially to the feet), which can eventually affect the entire body.

Various maladies stemming from prolonged standing are heel spurs, bunions, plantar fasciitis, Achilles tendonitis, arthritis, hammer toes and circulatory problems including high blood pressure and varicose veins.

Some people, such as pregnant women, are even more susceptible to the ill effects of extensive standing.

This course has shown, however, that the therapist has tools to prevent or deal with prolonged standing. Flexibility, Pilates and care in selecting shoes are all potent techniques. Surgical options for worse cases were discussed.

Getting and keeping your body in great general condition to sustain you through prolonged standing helps. Rebounding, body bruising and finding ways to make exercises a routine make this easy.

I hope this information will serve you well and help you care for your health.

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