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The Journal of American Manual Medicine Association was created to serve as a rational scientific voice for the medical massage and medical manual therapy community. The AMMA Journal is peer reviewed scientific publication. Articles and papers that are published in the AMMA Journal are presented in three main subject groups, editorial opinion, and scientific research, and legal, regulatory, and political events that pertain the medical massage and medical manual therapy professions.

Articles and papers written by outside contributors to the AMMA Journal do not necessarily reflect the view or position of the American Manual Medicine Association.

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***AHS*PUBLICATIONS**

From the editor...

Dr. Gregory T. Lawton

Dear AMMA Member:

In this issue you will find articles and research papers that have been submitted by the AMMA membership. The purpose of this issue is to provide our members with an "inclusionary" experience and the ability to contribute directly to their professional journal, JAMMA.

There is a noticeable lack of quality research and articles prepared and written by massage and manual therapists. One of the avowed purposes of JAMMA is to remedy this deficiency by giving our medical massage and medical manual therapy members a voice. This issue is dedicated to our members who have prepared papers related to the study and practice of medical massage and medical manual therapy.

This issue is also, in a sense, a celebration of our associations diversity of interests and expression of opinions. Through these articles and papers the contributing AMMA members demonstrate that we are indeed an organization of varied backgrounds and a broad membership base.

As a member of the AMMA you have completed a concentrated program of study in medical massage, passed the most difficult national board exam in the profession, and you stand at the highest pinnacle of the massage profession. To remain at the top you need to invest in your professional development on a daily basis. Since you are a medical massage therapist there is simply no limit to the knowledge that you need and can acquire that pertains to the conditions that you treat and the practice skills that you need to master. Your acquired knowledge and abilities pertain to being able to sort out the numerous false doctrines, pseudo scientific theories and fringe practices of your profession so that you do not commit the ethical errors of other massage therapists and so that you can select the most appropriate technique or treatment protocol for your patient.

One of the primary purposes of the American Medical Massage Association is to create a distinctive identity for our members through the actualization of the highest professional standards in the industry. Hopefully it is the members of the AMMA, through their professional conduct and high educational standards that will contribute to uplifting this noble profession.

Yours in good health,

Dr. Gregory T. Lawton

As a manual therapist, I enjoy the fact that I have the opportunity to learn and grow with every client that comes into my office. My fervent desire is that this educational journey would never end.

Through both the joys and storms of life there is impact on life; there are lessons to be learned; there is opportunity for growth.

As a practicing therapist and educator, I try to cultivate this same desire for growth with my clients and students on a daily basis. I am thankful that many have risen to the challenge.

The articles in this issue of JAMMA have been contributed by therapists just like you. They are individuals who understand that learning never ends, and have a hunger to grow and blossom to their full potential.

If you too wish to contribute to JAMMA, please fell free to contact me. I would love to hear what you have been researching and its effects on you and the clients whose lives you touch.

Thank you for the honor to serve you as together, we continue along this educational journey.

Christina Harangozo

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Submission Guidelines

The Journal of American Manual Medicine Association is a peer reviewed scientific journal that publishes research and articles related to manual medicine.

How to Submit:

- Potential articles must be an original contribution to, or report in, the field of medical massage and manual therapy. It must use objective evaluation criteria. Articles are subject to editorial and peer review.
- Articles should be submitted by e-mail as a Microsoft Word or rich text format document to JAMMA@americanmedicalmassage.com
- Include your name, address and the best way to contact you.

JAMMA is published quarterly by the American Manual Medicine Association. If your article is chosen to be reviewed, you will be contacted.

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Medial Tibial Stress Syndrome

Richard J. Liwosz

In the United States we are big on sports. With sports there are injuries. Shoulder injuries in swimming and volleyball, elbow injuries in golf and tennis, knee injuries in football and basketball and lower leg injuries in track and gymnastics to name just a few. Lower leg injuries have been commonly called shin splints which is a non-diagnostic term referring to any soreness or pain that occurs in the lower leg that is below the knee and above the ankle. The pathology focus in this paper will be medial tibial stress syndrome (MTSS).

Historical Perspective

Devas [14] reported on the syndrome of "shin soreness" in 1958 and theorized that most affected patients had atypical stress fractures. Clements [15] used the term "tibial stress syndrome" in 1974 and appeared to have been the first to postulate that it represented periostitis that might progress to a typical stress fracture. The first use of the term "medial tibial stress syndrome" was by Mubarak et al [16] in 1982, introduced a term they credited to Drez. They agreed with Clements that periostitis was the central lesion of this syndrome, but investigated findings to the contrary have been noted. Several studies [17, 18, 19] failed to demonstrate periostitis in biopsies of patients undergoing facsciotomy for recalcitrant MTSS. In 1984, Holder and Michael [20] reported specific pattern on triple-phase bone scans of patients who had "shin splints." This resulted in the pathology of MTSS.

Medial Tibial Stress Syndrome (MTSS)

MTSS is described as pain in the middle or distal thirds of the medial border of the tibia. The lower leg or calf region is a complex formation of inter-weaving and over-crossing muscles and tendons. Pain will occur when the soleus muscle becomes tight and short then pulls the attachment to the tibia, irritating the periosteum. The pain can be located at the soleus muscle at its origin on the posteromedial or deep inflammation of the periosteum of the tibia beneath the posterior tibialis muscle. (See Fig. 1) This can lead to the tearing of muscle fibers particularly where they attach to the bone.

"The 'pathology' of MTSS is likely to be merely a symptomatic expression of normal (albeit hyper-stimulated) periosteal modeling at the site of maximal tibial strain when under loads. That is, when the tibia experiences chronic and repetitive strain in a pattern that invokes exaggerated or abnormal bending, it is stimulated to deposit new bone on its periosteal surface at the level of the narrowest diaphyseal cross-section (junction of the mid and distal thirds) to reduce potentially injurious strains at this site in the future. (12) Clients need to be referred out to find out if they have type I, II, or III MTSS. Magnetic resonance imaging (MRI) has been found to help define the extent and degree of bone involvement in tibial stress reaction (type I or II) and may be helpful in following and providing objective criteria for advising a return to sport. (21) Compartment pressure measurements help to exclude the presence of chronic exertional compartment syndrome (CECC) of the deep posterior or posterior tibialis compartments. (See Figure 2)

Signs and Symptoms of MTSS

Patients with medial tibial stress syndrome typically have a dull, aching type of pain on the inside of their tibia bone. (See Fig. 3) Obtain a history of previous injury and ensure that old injuries have been fully and appropriately rehabilitated particularly if the individual has been in a cast for any length of time resultant reduction in bone and muscle mass. There may not be a small amount of detectable swelling over this part of the tibia. You may have pain during exercise, at rest, or both. Some specific maneuvers, especially resisted plantar flexion, typically cause an increase of symptoms. An x-ray sometimes shows chronic cases of MTSS, where there is a mild thickening or an uneven edge at the end of the tibia in the back. X-rays are also often taken to rule out a stress fracture. However, x-ray may not show a fracture line or a healing stress fracture until several weeks after the injury, so a bone scan, computed tomography (CT) scan or magnetic resonance imaging (MRI) scan may be used instead. Other possible explanations for exercise-induced lower leg pains include compartment syndrome, tibiofibular synostoses, bone tumors, and pes anseris bursitis.

Letha Griffin, MD, spokesperson for the American Academy of Orthopedic Surgeons, gives a way to tell if the front of your lower leg needs expert attention. Press a finger where the patient feels pain, and then press around that area. If the patient feels pain along an area of 2 to 3 inches or more, they probably have MTSS. But if the pain is in one small spot, move your finger about an inch above the site and press. No pain? Now press an inch below. No pain? That usually means a stress fracture and a visit to their doctor.

The physical findings of MTSS are related to the type of MTSS present. Patients with type I MTSS have very localized bony tenderness over the region of the stress fracture. In those with stress microfractures, there is bony tenderness along the posteriormedial tibia, which is usually less localized than observed in stress fractures. It is important to remember that a stress microfracture may present with both negative findings on radiography and bone scanning, in which case diagnosis is dependent on the physical examination. Patients with type II MTSS, also known as the soleus syndrome, have maximal tenderness over the surrounding periosteum and fascia of the soleus, and not on the bone. Patients with type III MTSS have CECC of the posterior compartment. Pain is usually described as being deep in the back of the leg and not in the bone or adjacent soft tissue. Physicians confirm diagnosis by a compartment pressure measurement. (21)

Causes of MTSS

“Most recent investigations suggest that tibial stress injuries are a consequence of repetitive tibial strain imposed by loading during chronic weight-bearing activity.” (11) There are five areas that will be looked into the causes of MTSS. These causes include training errors, cumulative stress, biomechanics, training surface, and shoes. The human body is able to adapt to increased workouts but each person has a limit as to how much training the body can adapt to and how quickly it can adapt to that higher level. When we exceed the level that our body is able to adapt to then it becomes destructive and injuries follows. The common training errors include sudden onset of training without gradual build up and sudden significant increase in training with out gradual build up. Beginners are more likely to get them simply because their bodies are not used

to the work, which is why it is so important to build up gradually. Just as increasing the volume or intensity of training can exceed the limit of the body to recover; prolonged training, without distinct periods of rest, can also lead to injury.

Foot abnormalities or biomechanics can contribute to MTSS. An excessively high-arches or under pronated of the foot is when the foot hardly rolls inward. The foot does not absorb the shock well, which could lead to numerous problems such as shin, knee, hip, and foot injuries. It is recommended that people with high-arches or under pronated should wear shoes with a well-cushioned heel and insole that absorb energy at the point of impact. Those with low-aches or pronation of the foot is a major cause of MTSS. The foot continues to roll excessively inward causing the tibia to twist, which in-turn, over stretches the muscles of the lower leg. Over time, this can cause inflammation of the shin muscles and tendons. The final biomechanics is flat-footed. This is when once the foot lands, flattens out, and the ankle rolls inward and pronates. The tibia is forced to twist slightly in the opposite direction, stretching on the calf muscle. From the foot rolling inward too much transferring much of the pounding to the inner portion of the lower leg resulting in MTSS. Footwear with firm mid-sole to help control excessive motion. Research shows the females are more likely to suffer from MTSS than males because their hips, on the average, are wider than males. Because of the wider hips, a woman's foot strikes the ground at a greater angle resulting in over pronation.

To check your arches, give yourself the wet foot test. When you step dripping from the shower, stand normally on a bath mat, then step away and check your footprint. #1 is flat-footed, #2 are high-arches or under pronation and #3 is a normal footprint. (See Fig. 4)

Other biomechanical problems include poor running mechanics; tight, stiff muscles in the lower leg; running with excessive forward lean; running with excessive backward lean; landing on the balls of your foot; and running with your toes pointed outwards.

An athlete must also consider the terrain they workout on to prevent MTSS. The magnitude of force when the foot lands will vary depending on the surface. Here is a list from hardest to softest of common running surfaces: steel, concrete, asphalt, packed dirt, grass, treadmill, and bark chips is the best surface of them all. Training surface including embankments, crowned roads can place increased tensile loads on the distal medial tibia and modifications should be made whenever possible. Other terrain to be aware of are uphill, downhill, and uneven ground, which can cause other injuries.

The final area we will look at is the equipment, which are the shoes. We briefly discussed shoes concerning arches earlier. In a recent study of runners in British Columbia, shoes age was significantly related to injury. So another concern would be the age. When discussing age we must look at how many miles have the shoes been used for in training. It is recommended to replace shoes every 250 miles of training. By this time the shoe insole is breaking down and the body is absorbing more of the force when the foot is landing which could lead to injury.

Treatment of MTSS

"In the last 30 years, few advances have been made in the management of tibial stress injuries such as tibial stress fractures and medial tibial stress syndrome (MTSS). Tibial overuse injuries are recognized complications of chronic, intensive, weight-bearing training commonly practiced by athletes and military populations. Be sure to have patient see and physician to rule out a compartment injury. Generally, the most effective treatment is considered to be rest, activity modification, cross-training and stretching and strengthening the muscles of the deep posterior compartment and the triceps surae. "Acutely, the most effective adjunctive treatment is ice massage. Ultrasound, therapeutic massage, phonophoresis, anesthetic injections, and whirlpool baths may also offer some benefit. Some clinicians use applied electrical fields (which will be looked into more later) to stimulate the rate of stress fracture healing and to reduce recovery time from MTSS; however, adequate placebo-controlled studies have not been done on this modality. (7)

Active Release Technique is a new and highly successful hands-on approach to injuries of muscles, tendons, fascia, nerves and the surrounding soft tissue. "It is similar to some massage techniques, only it's more aggressive. The art of it all is being able to know where to look for adhesions, how to feel for them and how to use active motion of the body part to break them up, says inventor Mike Leahy, DC." This technique is applies by hand using a very specific pressure and tension on the muscle involved while moving the muscle underneath the contact of the thumb or fingers. The affected tissue is trapped while the body part is moved; taking the tissue from it's shortened to elongated position. Relative motion between tissues is introduced in order to restore gliding between those tissues. This method softens and stretches the scar tissue, resulting in increased range of motion, increased strength, and improved circulation, which optimizes healing. The treatments are combined with proper stretching and strengthening of the tissue. (22)

Immediately following the onset of pain, the R.I.C.E.R. regime should be applied. This involves Rest, Ice, Compression, Elevation, and Referral to a professional for an accurate diagnosis. It is critical that the R.I.C.E.R. regime be implemented for at least the first 48 to 72 hours. Doing this will give you the best possible chance of a complete and full recovery. The next phase of treatment involves a number of physiotherapy techniques. The application of heat and massage is one of the most effective treatments for speeding up the healing process of the muscle and tendons. (5, 6, 8)

The benefits of massage are gaining wider acceptance. Hold off on massage for the first three days following a specific injury, unless you want to go for a light massage. After three days, a deeper massage, working around the injury vigorously and the direct area moderately works best.

Only one study has reported the effect of electrical stimulation for the recovery from MTSS, and its findings must be interpreted with caution to a number of confounding factors and variations in treatment protocol between subjects. Results indicated that, in comparison with rest alone, a protocol of 5 to 8 minutes of interferential electrical stimulation at 50 to 100Hz three times a week reduced MTSS recovery time from an average of 3.8 to 1.3 weeks. These findings reflect an appropriate reluctance to utilize a modality in the absence of data from placebo-controlled

studies specific to stress fractures; however the preliminary evidence suggests that such research is overdue. (11)

As a last result surgery is performed. In a study from the Journal of Bone and Joint Surgery with 46 subjects the majority, or 69%, reported either a good or excellent result. Only 19, or 14% returned to their pre-symptom level of sports. Use of a visual-analog scale found that pain reduction of 71.6% was achieved with surgery. 9% reported poor outcome, 22% reported fair outcomes. The authors indicated that the procedure might be good for pain reduction, but not always a guarantee that the subject will return to pre-symptom sport level. (23)

Prevention of MTSS

Prevention rather than cure should always be your first aim. Since about half of all lower leg problems are caused by biomechanics inefficiencies, it makes sense to get the proper shoe. The feet are the one area not to be "skimp" on. In the article, Shin Splints by Brad Walker he gives the following three preventative measures are not only very effective, but crucial. Firstly, a thorough and correct warm up will help prepare the muscles and tendons for any activity to come. Without proper warm up the muscles and tendons will be tight and stiff. There will be limited blood flow to the lower legs, which will result in a lack of oxygen and nutrients for those muscles. Secondly, flexible muscles are extremely important in the prevention of lower leg injuries. When muscles and tendons are flexible and supple, they are able to move and perform without being over stretched. If however, the muscles and tendons are tight and stiff, it is quite easy for those muscles and tendons to be pushed beyond their natural range of movement. And thirdly, strengthening and conditioning the muscles of the lower leg will also help to prevent MTSS. There are a number of specific strengthening exercises you can do for these muscles, but you would need to see a fitness trainer to help you with them. Another suggestion in the area of prevention is to cool your legs down after training; hose them down with cold water or put some ice on them. This will reduce inflammation and consequently the build up of inflexible scar tissue.

Stretches for MTSS

From the article Shin Pain (Shin Splints) Rehabilitation Exercises by Tammy White M.S., P.T. describes the following exercises to be done with both legs:

Towel stretch – Sit on a hard surface with your inured leg stretched out in front of you. Loop a towel around the ball of your foot and pull the towel toward your body keeping your knee straight. Hold this position for 15 to 30 seconds then relax. Repeat 3 times. When you don't feel much of a stretch using the towel, start using the standing calf stretch.

Standing calf stretch – Facing a wall, put your hands against the wall at about eye level. Keep the injured leg back, the uninjured leg forward, and the heel of your injured leg on the floor. Turn your injured foot slightly inward (as if you were pigeon-toed) as you slowly lean into the wall until you feel a stretch in the
Back of your calf. Hold for15 to 30 seconds. Repeat 3 times. Do this exercise several times each day.

Anterior compartment stretch – Stand with one hand against a wall or chair for balance. Bend your knee and grab the front of your foot on your injured leg. Bend the front of the foot toward your heel. You should feel a stretch in the front of your shin. Hold for 15 to 30 seconds. Repeat 3 times.

Resisted dorsiflexion – Sit with your leg out straight and your foot facing a doorway. Tie a loop in one end of the tubing. Put your foot through the loop so that the tubing goes around the arch of your foot. Tie a knot in the other end of the tubing and shut the knot in the door. Move backward until there is tension in the tubing. Keeping your knee straight, pull your foot toward your body, stretching the tubing. Slowly return to the starting position. Do 3 sets of 10.

Ankle range of motion – sitting or lying down with your legs straight and your knee toward the ceiling move your ankle up and down, in and out, and in circles. Only move your ankle. Don't move your leg. Repeat 10 times in each direction. Push hard in all directions.

Heel raises – Balance yourself while standing behind a chair or counter. Raise your body up onto your toes and hold it for 5 seconds, then slowly lower yourself down. Repeat 10 times. Do 3 sets of 10.

Resisted inversion – Sit with your legs straight and cross your uninjured leg over your injured ankle. Wrap the tubing around the ball of your foot and then loop it around your uninjured foot so that the tubing is anchored there at one end. Hole the other end of the tubing in your hand. Turn your injured foot inward and upward. This will stretch the tubing. Return to the starting position. Do 3 sets of 10.

Resisted eversion – Sit with both legs stretched out in front of you, with your feet about a shoulder's width apart. Tie a loop in one end of the tubing. Put you injured foot through the loop so that the tubing goes around the arch of that foot and wraps around the outside of the uninjured foot. Hold onto the other end of the tubing with your hand to provide tension. Turn your inured foot up and out. Make sure you keep your uninjured foot still so that it will allow the tubing to stretch as you move your injured foot. Return to the starting position. Do 3 sets of 10.

Standing toe raises – Stand with your feet flat on the floor, rock back onto your heels and lift your toes off the floor. Hold this for 5 seconds. Do 3 sets of 10.

Static and dynamic balance exercises – A. Place a chair next to your non-inured leg and stand upright. (This will provide you with balance if needed.) Stand on your injured foot. Try to raise the arch so your foot while keeping your toes on the floor. Try to maintain this position and balance on your injured side for 30 seconds. This exercise can be made more difficult by doing it on a piece of foam or a pillow, or with your eyes closed. B. Stand in the same position as above. Keep your foot in this position and reach forward in front of you with your injured side's hand, allowing your knee to bend. Repeat this 10 times while maintaining the arch height. This exercise can be made more difficult farther in front of you. Do 2 sets. C. Stand in the same

position as above. While maintaining your arch height, reach the injured side's hand across your body toward the chair. The farther you reach the more challenging the exercise. Do 2 sets of 10.

Hip abduction (with elastic tubing) – Stand sideways near a doorway with your uninjured side closest to the door. Tie elastic tubing around the ankle on your injured side. Knot the other end of the tubing and close the knot in the door. Extend your leg out to the side, keeping your knee straight. Return to the stating position. Do 3 sets of 10. To challenge yourself, move farther away from the door. (9)

Athletic injuries to the leg are relatively frequent. Most of these injures are secondary to overuse and frequently result from errors in training. When evaluating and athlete with leg pain, attention should be paid to lower extremity alignment, muscle strength and flexibility, and gait biomechanics. Using clinical evaluation the physician should be able to make a specific diagnosis and initiate the appropriate treatment program. A return to athletic participation must be guided and evaluated to optimize the time to recovery and to prevent future athletic injury.

References

1. White, T., Shin Pain (Shin Splints) Rehabilitation Exercises. Clinical Reference Systems, 2005
2. Steckel, M., Shin Splints. www.spinalheath.net/inj-shin.html, 1996-2005
3. Rouzier, P., Shin Pain (Shin Splints). Clinical Reference System, 2005.
4. Stanten, M., How Serious is Shin Pain. Prevention, Jan98, Vol. 50 Issue 1, p57
5. Walker, B. Shin Splints. www.wildgrapes.com au, 2003
6. Walker, B., Shin Splints. www.thestretchinghandbook.com, 2000
7. Couture, C., Tibial Stress Injuries. Physicians & Sportsmedicine, Jun2002, Vol. 30 Issue 6, p29
8. Cooper, J., Shin Splints; Some Advice on Avoiding Them and Getting Rid of Them. www.macclesfield-harriers.co.uk, 2001
9. Roix, J., Shin Pain. www.northeastrehab.com, 2005
10. Below, S., How to Manage Shin Splints. www.hughston.com, 1999
11. Cluett, J., Shin Splints. www.orthopedics.about.com, 2002
12. Becker, R., Shin Splints. www.watfxc.com, 2001
13. Humphries, D., External Compartment Syndrome. Medscape General Medicine, 1(2), 1999
14. Daves, MB., Stress Fractures of the Tibia in Athletes or 'Shin Soreness.' J bone Joint Surg Br 1958; 40:227-239
15. Clement, DB., Tibial Stress Syndrome in Athletes. J Sport Med 1974;2:81-85
16. Mubarak, SJ., Gould, RN., Lee, YF., et al: The Medial Tibial Stress Syndrome: A Cause of Shin Splints. Am J Sport Med. 1982;10(4):2001-205
17. Michael, RH., Holder, LE., The Soleus Syndrome : A Cause of Medial Tibial Stress (Shin Splints). Am J Sport Med 1985;13(2):87-94
18. Detmer, DE., Chromic Shin Splints: Classification and Management of Medial Tibial Stress Syndrome. Sports Med 1986;3
19. Johnell, O., Rausing, A., Wendeberg B., et al: Morphological Bone Changes in Shin Splints. Clin Orthop 1982; 167(Jul):180-184

20. Holder, LE., Michael, RH., The Specific Scintigraphic Pattern of 'Shin Splints in the Lower Leg': Concise Communication. J Nucl Med 1984;25(8):865-869
21. Touliopolous, S., Hershman, E.B., Lower Leg Pain: diagnosis and Treatment of Compartment Syndromes and Other Pain Syndromes of the Leg. Sports Medicine, 01121642, Mar1999, Vol. 27. Issue 3
22. Horwitz, S., Shin Splints. www.youcanbefit.com/shin.html, 1999
23. Yates, B., Outcomes of Surgical Treatment of Medial Tibial Stress Syndrome. Journal of Bone and Joint Surgery. Vol. 85-A, No. 10, October 2003

Osteoporosis
Katie R. Ryder

Osteoporosis has become a great American concern with 10 million American's affected by this condition and another 18 million with reported bone mass loss. This is an obvious issue that needs to be addressed. In this paper you will be educated on the process of how bone is made, I will then define Osteopenia and Osteoporosis and their differences. You will also learn the treatment process of Physicians, and their diagnostic testing. I will then educate the importance of diet, exercise, herbal remedies and how Manual therapy can be applied for a treatment process and Prevention for Osteoporosis. You will also be able to observe a personal Case Study of an Osteoporosis individual that I have personally given treatment to.

How bone is made:

Two types of bone cells are involved in building bone: Osteoclasts and Osteoblasts. Osteoclasts trigger bone reabsorption; they are the cells that break down existing bone to make way for new bone. After Osteoclasts does their job then the Osteoblasts trigger the bone building mechanism that is necessary to replace the bone that has been reabsorbed. From childhood to around the age of 30, the Osteoblasts work harder than the Osteoclasts, which means that more bone is built than is reabsorbed. At around age 30 you reach your peak bone mass, this is the time that your bones are as dense as they will ever be. For awhile the osteoclasts and osteoblasts work evenly, at around the age 50 the osteoclasts begin to work more than the osteoblasts, in result more bone is reabsorbed than new bone is made. This causes a decrease in bone density which could eventually develop into Osteoporosis.

What is Osteopenia:

Osteopenia is a mild thinning of bone mass; it is not as severe as Osteoporosis. Osteopenia is the first step to Osteoporosis. It is recognized usually in people over the age of 50 with a lower than average bone density and who do not have Osteoporosis. "Osteopenia is not a condition it is mainly a term, it was discovered so that women would become more aware of their thinning bones and take the necessary precautions to avoid Osteoporosis."- States Bruce Ettinger, MD, a senior investigator at Kaiser Permanente in Oakland California-

What is Osteoporosis?

Osteoporosis is a decrease in bone mass with a decrease in density and the enlargement of bone spaces. This produces porosity and fragility. This happens when calcium is pulled away from the bones faster than it can be replaced. This leaves bones thin, brittle, chalky and prone to injury.

Who it affects:
"An estimated 10 million Americans are affected with Osteoporosis and 18million people, mostly women are affected with low bone mass. Close to 1.5 million bone fractures in the United States each year are related to Osteoporosis". -A massage therapist's guide to Pathology- 3rd edition- "50,000 people die each year from post-fracture complications, and as many as one-fifth of people suffering from Osteoporosis will end up in a nursing home". -Healthreports.com- Osteoporosis affects mainly Caucasian and Asian women, it affects women five times greater than men, and this is because women have lower bone density than that of men. Men loose about 0.4% of their skeletal mass per year after the age of 50. Women loose about 0.75%-1.0% of their skeletal mass per year after the age of 35, this may accelerate to as much as 2-3% per year following menopause. (Refer to table #1 and table #2)-World Health Organization (WHO)- Small boned, thin women, history of anorexia are also causes for this condition. Women that are post-menopausal are at a greater risk for Osteoporosis due to hormone imbalances, bone loss can range from 4 to 8% at menopause. Stress is also a huge contributor, when the body is under stress it produces Cortisol which is a stress hormone that decreases bone density by pulling calcium from the bones, medications such as Prednisone (commonly used to treat autoimmune diseases, asthma, and inflammatory issues) have this same effect. Diet, Exercise, Decrease in Calcium, Vitamin D, and Magnesium, Smoking and consuming Alcohol all increase your chances of bone thinning.

Risks from Osteoporosis:

People normally do not realize that they have Osteoporosis until it has become severe. Osteoporosis puts you at risk for fractures that can result in shrinking height, back pain or a humped back. Osteoporosis increases fractures in bones especially in the spine, wrist or hip. (See figure #6 page 14)

Doctor's Recommendations:

Some of the drugs that physicians usually recommend include Fosamax, Actonel and Evista. These drugs are toxic poisons that contain the same type of chemicals that are used to remove soap scum from bathtubs. All 3 of these drugs have numerous side effects, including but are not limited to back, muscle, bone or joint pain, stomach pain or upset, or constipation, nausea, abdominal pain, and bloating. These do not increase bone density, they retain the dead bone mass by killing osteoclasts, the limited space in the bone is taken up by dead or nearly dead bone cells, which prevents new cells from being made, as a result bones become more fragile and more vulnerable to fractures. Another medication that can be prescribed is Premarin, Prempro, or Premarin vaginal cream. These all contain estrogen which increases the chances of cancer in the uterus. Side effects include heart attack, stroke, breast cancer, and blood clots. Estrogens may increase your chance of dementia (based on a study of women age 65 years or older) - Dr.Sally A. Shumaker, director of the study and a professor of Public Sciences at Wake Forest

University in Winston, NC.- Based on a 4 year experimental study involving 4,532 women, half took Placebo's and the other half took Prempro which are both widely prescribed for hormone therapy. Twenty three cases of dementia out of 10,000 women will develop each year as a result of hormone therapy. 1.2 million women use primpro, before this study was conducted there were 6 million users. Wyeth, the company that makes Prempro, said it would add a new warning about the increased risks of dementia to the drug's labeling.

Testing/Diagnosing:

Dual—Energy X—Ray Absorptiometry (DEXA) scan, -from the Department of Family and Community Medicine, Wake Forest University-(see figure #5 page 13) a machine that measures bone density at the hip and spine, where fractures are most likely to occur. A T-Score was developed for this machine, a statistical term called the standard deviation, which measures how far something is away from the norm. Experts decided that a -2.5 standard deviation below the norm would be used as the definition for Osteoporosis. Osteoporosis can be identified only by x-ray and bone-density tests, even with these methods 30-40% loss of bone density usually has to occur for any decrease in bone mass to show up. Another way to determine Osteoporosis is to rule out Hyperthyroidism, this condition can cause the release of too much parathyroid hormone, which consequently over stimulates osteoclasts. In later stages, compression or spontaneous fractures of the vertebrae, wrists, or hips may be present. Kyphosis (exaggerated backward curvature of the thoracic region of the spinal column) brought about by compression fractures of the vertebrae is a frequent indicator of osteoporosis.

How to take care of your bones:

Stop drinking Soft drinks. Soft drinks are high in phosphoric acid and sugar, making them very acidic. Phosphoric acid picks up calcium and flushes it out of the body as it is eliminated. This lowers blood calcium levels. To remedy this, the parathyroid gland restores the calcium balance in the blood by pulling calcium from the bones. Therefore soft drinks can be a contributing factor to Osteoporosis.

Avoid too much milk and milk products. A study produced that women who drank 2 or more glasses of milk per day increased their risk of fractures compared with women who drank less than 1 glass per week, this also included consumption of yogurt, cheese and other dairy products. -Harvard University's Landmark Nurses Health Study -followed 78,000 women over a twelve year period found that the women who consumed the most calcium from dairy foods broke more bones than those who rarely consumed milk.

There are 2 reasons why milk products may lead to Osteoporosis. The first reason is, milk contains so much phosphate (phosphorus) that it actually pulls the calcium from the bones. The second reason is that milk has 8 times the amount of calcium than it does magnesium, this ratio is extremely off. You actually need just about as much magnesium than you do calcium in order for the calcium to be absorbed into your bones. Increase your Calcium; good sources of calcium include dried beans, broccoli, rhubarb, greens and tofu. "Studies have shown that women and young girls consume less than half the amount of calcium recommended to grow and maintain

healthy bones. Depending on age, calcium intake should be between 100 and 1300 mg per day. Postmenopausal women need 1200 mg per day". -National Academy of Sciences-

Increase your magnesium intake. Magnesium is essential for moving calcium into the bones. It suppresses the hormone that tells your body to pull calcium from the bones, and it stimulates the hormone that tells the body to put calcium in to your bones. Excess calcium, without the proper amount of magnesium, prevents the absorption of magnesium and causes a magnesium deficiency. This leads to calcium being pulled from the bones. This calcium is all too often deposited in the soft tissue, where it can cause arthritis and arteriosclerosis. Magnesium will pull out the unwanted calcium from the arteries and joints and help to put it back into the bones.

Try to decrease the amount of animal protein that you consume. A National Institute of Health study at the -University of California, published in the American Journal of Clinical Nutrition- (2001) found that women who ate most of their protein from animal sources had three times the rate of bone loss and 3.7 times the rate of hip fractures as women who ate most of their protein from vegetable sources. Increase vegetable protein consumption and decrease the amount of animal protein, may decrease bone loss and risk of hip fractures.

Limit salt intake, sodium leaches the calcium out of the bones. Eat plenty of fruits and vegetables; they contain vitamin C which is essential for building collagen, the underlying bone matrix.

Weight bearing exercise is an excellent start to improving osteoporosis. It increases the density of the bones. Some weight bearing exercises include: walking, dancing, jogging, stair climbing, racquet sports, and hiking-any exercise in which your feet are bearing your weight. Resistance training is also very beneficial; this includes weight lifting and free weights.

Reduce Stress. Cortisol is a stress hormone, it is the primary glucocorticoid produced by the adrenal cortex gland. Cortisol is produced when your body is under stress; in return this causes calcium to be pulled from the bones.

DHEA is the master hormone in the body. When the supplies are plentiful, the body can use it to make any hormone that the body needs. When stress or a high carbohydrate diet raises cortisol levels, DHEA levels fall. DHEA's have a high statistically correlation with vertebral bone density in post menopause and help to fight against osteoporosis. -Smart Drug News, Ward Dean MD and Steven WM Fowkes- DHEA has anti-aging properties, because it counteracts cortisol. Raising DHEA levels can provide many health benefits such as anti aging, anti obesity, anti cancer, and they also stabilize nerve cell growth.

Vitamin D and Boron. These 2 nutrients are both needed to fight osteoporosis. Over the age of 60 you need at leased 2,000 units of Vitamin D per day and 3mg of Boron per day. Vitamin D is essential for building bones through childhood and young adulthood and for maintaining it in the middle ages and beyond. -New England Journal of Medicine- When Boron was tested in post-menopause, boron supplementation markedly reduced the urinary excretion of calcium and magnesium, which prevents calcium loss and bone demineralization. -United States Department of Agriculture, Grand Folkes Hurman Nutrition Research Center, North Dakota-

Vitamin K regulates calcium and keeps it in the bones and out of arteries, stopping heart attack and osteoporosis at the same time. It inhibits the loss of calcium from the bones, and is needed to absorb calcium into the bones. One study demonstrated a reduction in calcium loss by up to 50% in osteoporotic individuals. Osteocalcin is a protein that binds to calcium and builds bones. It is vitamin K dependent. Lack of vitamin K leads to not enough osteocalcin being utilized. It remains free, so not enough calcium will be absorbed into your bones.
Useful Herbs:

Chaparral works to relieve pain and also helps to heal and strengthen bone. Shave grass promotes fast healing. Parsley can be used to oxygenate the bodies system. Use Burdock as a tonic and purifier. Marshmallow and Slippery Elm will help to strengthen ligaments and bones. Consume Plaintain to promote bone healing. And lastly Comfrey can also be used to promote bone healing, but it should always be used with Burdock. All of the herbs listed above can all be used to promote bone health and to fight against osteoporosis and the symptoms that follow this condition.

Direct Manual Massage Therapy can help prevent and slow Osteoporosis. Manual Therapy is a type of massage that can be utilized to help strengthen bone. Considering that the spine is affected greatly from Osteoporosis, A manual therapist can perform a fast cadence when applying vertebral work; in return this helps to strengthen the vertebrae. This type of treatment can also be incorporated to the hip area which is most susceptible for fractures. Manual therapy will also help to increase the degree of Range of Motion that might be decreasing due to Osteoporosis. Massage Therapy can also be very beneficial for this condition because it can help to reduce stress, which in return decreases the amount of cortisol being produced in the body. Massage can also help to relieve pain symptoms associated with this condition.

A study was performed in 2003 by Lippincott Williams & Wilkins, Inc. in which they compared the effect of manual therapy to exercise therapy in sick listed patients with chronic low back pain. Patients with chronic low back pain for more than 8 weeks and less than 6 months were included. A total of 49 patients were randomized to either manual therapy or to exercise therapy. 16 treatments were given over the course of 2 months. Pain intensity, functional disability, general health and return to work were recorded before, immediately after, and at 4 weeks, 6 months, and 12 months after the treatment period. Spinal range of motion (Schober test) was measured before and immediately after the treatment period. Results showed significant larger improvements in manual therapy than that of the exercise therapy. After the 2-month treatment period, 67% in the manual therapy and 27% in the exercise therapy group had returned to work.

In conclusion, a regular dose of manual/massage therapy can be very beneficial to treating Osteoporosis. Along with a healthy diet, low in dairy and high in good calcium, magnesium, vitamin D and vitamin K, with a few added herbal remedies that can also promote a healthy strong body. Weight bearing exercise to continue on improving bone strength, these will all be very beneficial to maintaining and promoting strong bones which in return reduces the chance of fractures and promotes overall health and independence.

References

1. Bruce Ettinger, MD, a senior investigator at Kaiser Permanente in Oakland California
2. A Massage Therapist's Guide to Pathology-3rd Edition
3. www.Healthreports.com
4. World Health Organization (WHO)
5. www.Premarin.com
6. Department of Family and Community Medicine, Wake Forest University
7. National Academy of Sciences
8. Lippincott Williams & Wilkins, Inc.
9. WebMD, Inc.
10. A.D.A.M.
11. HOLOGIC
12. Physicians committee for responsible medicine PCRM@PCRM.ORG WWW.PCRM.ORG
13. Smart drug new
14. United states department of agriculture, grand folks human nutrition research center, North Dakota
15. New England Journal of Medicine
16. www.milksucks.com

What is Adhesive Capsulitis?
Heather Breen

Adhesive Capsulitis also known as *Frozen Shoulder* is a shoulder condition that if left untreated could result in loss of joint range of motion. Adhesive Capsulitis is a condition that involves the reduction or loss of range of motion to the glenohumeral joint in the shoulder girdle. Other similar conditions are arthritis, bone spurs, bursitis, rotator cuff tears and impingement syndrome. These other conditions generally lead to secondary adhesive capsulitis but do require different types of treatment for complete resolution. [1]

The cause of Adhesive Capsulitis is unknown. The condition is gradual, slow and painful and can take anywhere from a few weeks to over a year before the condition resolve. The main cause or contributing factors for Adhesive Capsulitis is undetermined. Statistics have shown that a patient with diabetes has a higher risk of developing the condition but the same is true for those recovering from a stroke, heart attach or people with thyroid conditions. Adhesive Capsulitis has been treated as an autoimmune disorder, although abnormal immune cells have been discovered in testing, it is still not enough to conclude.[2]

Etiology, Signs and Symptoms

The shoulder joint has less supporting connective tissue in comparison to other joint complex in the body, therefore this allows for large range of motion. The capsular ligament connecting the humeral head to the glenoid fossa is more mobile than other joint capsules, which increases the range of motion leaving the shoulder more assessable to injuries.

Adhesive Capsulitis is sometimes secondary to other shoulder injuries that have limited the use of the shoulder joint. The condition can also occur with out any joint trauma. The process of Adhesive Capsulitis is when the shoulder joint capsule adheres to the humeral head. The first stage is referred to as *FREEZING*. Stage 1 can take up several months and is very painful with activity and passive movement of the shoulder joint. Majority of the time the range of motion is lost first with medial rotation, but may progress in all directions. Stage 2 is referred to as *Frozen*. At this point the joint capsule has thickened and glued itself to the anterior portion of the humeral head. The range of motion will be severely limited and much of the pain has decreased. Stage 3 is the *THAWING* stage. Spontaneously the adhered connective tissue begins to resolve and the joint capsule is freed. Pain is eradicated and the range of motion is restored. This stage can take a long time. If this condition goes untreated it is likely that the range of motion at the shoulder joint will not be regained. [1]

Contributing Factors

Other inflammatory problems often precipitate this condition. Bursitis and tendonitis are other joint inflammatory conditions that will lead to adhesive capsulitis. Although at this time it is uncertain what the main cause or factor is for adhesive capsulitis. Most patients with adhesive capsulitis have no history of trauma. [2]

Diagnosis and Treatment

Generally, to test a patient for adhesive capsulitis a physician will base it on the patient's history and clinical testing. X-ray and MRIs may be performed to rule-out possible bone spurs osteoarthritis, tumors and tuberculosis but will not confirm adhesive capsulitis. Physicians will order an Arthrogram (the injection of contrast into the joint space) to confirm a health shoulder joint by the amount of contrast the joint will accommodate. A healthy shoulder will accommodate 20-30 mL of contrast were an affected joint will only accommodate 5-10mL. [1]

The treatment process of adhesive capsulitis has no guarantees. Studies have shown that various treatment methods may be successful but may not shorten the process. Over aggressive physical therapy and exercise while being painful also will increase the inflammation and prolong the freezing or frozen stage. Treatment for adhesive capsulitis will typically start with anti-inflammatory prescriptions, and then progress to home exercise and physical therapy. The worse case scenario would be surgery. Some physicians will prescribe Cortisone injections to decrease the inflammation and allow possible allow the adhered tissue to resolve. The Cortisone treatment is thought to improve range of motion if successful. The risk of Cortisone treatments is possible fractures of the humerus, rupture of the joint capsule or subscapularis muscle and neurovascular or cartilage injuries. [1]

Can massage therapy help?
Massage is very therapeutic for adhesive capsulitis. Massage will reduce adhesions and influence healthy scar tissue growth. Massage therapy will address edema and toxic accumulations from secondary muscle spasms. Massage will also help with the stiffness of the joint and encourage joint movement. [3]

Massage therapy for adhesive capsulitis will involve a process of steps and therapy procedures. First palpation of the affected area combined with motion palpation and general soft tissue preparation of the shoulder. Second is deep pocket compression with deep tissue to the periosteum massage. Third is joint physics of the shoulder joint for range of motion. Bony lever techniques with the humerus, facilitated energetic techniques applied to the shoulder and most importantly patient education, self care and home treatment exercises. [4]

Works Cited

1. Massage Today- May 2003, Volume 03, Issue 05
2. Emedicine.com-Adhesive Capsulitis article
3. A Massage Therapist Guide to Pathology Third Edition: by Ruth Werner
4. Homeosomatic Medical Manual Therapy, General Rehabilitation Protocol- Vol II by: Gregory T. Lawton
5. Musculosketal Anatomy: by Sieg and Adams

Chronic Lymphedema

Susan Snider

Chronic Lymphedema is a debilitating condition that affects an estimated 3-5 million Americans as well as millions more around the world.[i] Is there anything that can safely reduce the effects of chronic Lymphedema? Experts have been arguing this question for many years. Massage therapy, mechanical intervention, and nutritional guidance and supplementation are all being used to treat patients with this condition. The use and efficacy of these therapies will be discussed in this paper.

Lymphedema is "an accumulation of lymphatic fluid in the interstitial tissue that causes swelling, most often in the arm(s) and/or leg(s), and occasionally in other parts of the body. Lymphedema can develop when lymphatic vessels are missing or impaired (primary), or when lymph vessels are damaged or lymph nodes removed (secondary)".[ii] It is marked by an abnormal collection of excess tissue proteins, edema, chronic inflammation, and fibrosis.[iii] This paper will focus on the treatment of secondary Lymphedema, the most common form of the condition.

To understand this malady it is necessary to review the form and function of the lymphatic system. The lymphatic system is an integral part of the human body's immune system. It consists of the tonsils, thymus gland, spleen, lymph nodes in the armpit, breast and groin areas and the miles of vessels that form its transport system.

The fluid that travels through this system, called lymph, is comprised mostly of water, and contains albumin, globulin, salts, urea, neutral fats, glucose, some red blood cells and many white blood cells, especially mono-cytes and lymphocytes. The proteins and fats come from a substance produced in the digestive process called "chyle". Lymphocytes are the extremely important cells that attack bacteria in the blood.

Unlike the circulatory system, the lymphatic system has no central "pump". The movement of

lymph through the body is caused by muscular activity, movement, peristalsis and respiration.[iv] Lymph is not circulated. It travels "one-way" through the lymphatic vessels because of tiny valves present in the secondary vessels.

Lymph travels through clusters of lymph nodes on its way to its final destination, the blood stream. The largest clusters are located in the inguinal (groin) area, the neck and the armpits. There are approximately 500 lymph nodes in the adult human body. Some lymph nodes are as small as a pin-head, while others can be as large as a kidney-bean. Each lymph node has four afferent vessels through which the lymph enters and one efferent vessel that allows the lymph to exit. Each of these vessels is equipped with one of the "one-way" valves that are so important to the proper functioning of this system. As it travels through the lymph nodes, the lymph is filtered of molecules too large or potentially injurious to be introduced into the bloodstream. This occurs by way of a process performed by the white blood cells called phagocytosis. This process prevents some (but unfortunately not all) abnormal or diseased cells from dispersing through the bloodstream. This process is the reason lymph nodes swell when disease is present in the body.

After passing through the lymph nodes, the filtered lymph liquid travels through the capillaries and eventually empties into two main terminal vessels, the right lymphatic duct and the thoracic duct. These ducts empty the lymph into veins located in the neck region, where it is reabsorbed into the blood. Lymph from about three-fourths of the body drains into the thoracic duct, the largest lymph vessel in the body. This duct is located in the sternal region. This duct ascends into and through the thorax to the junction of the left internal jugular and the left subclavian vein, called the left venous angle. Lymph from the right upper extremity and from the right side of the head, neck and upper torso goes through the right lymphatic duct.[v]This duct is located at the base of the neck and enters the junction of the right internal jugular and right subclavian veins. This is called the right venous angle.

The substances inherent to lymph comprise what is referred to as the "lymphatic load". The lymphatic system's purpose is to drain these substances from the interstitial tissues because they are not absorbable by the blood's capillaries due to their size. Transport capacity is the "highest possible lymph flow per unit of time". As cited by W. Olszewski in the 1985 paper Peripheral Lymph: Formation and Immune Function, "the relation of the physiological resting lymph flow to the transport capacity of a healthy lymphatic system is approximately 1:10".[vi] This means that when the lymphatic system is healthy and fully functioning, it is able to transport ten times the amount of normal lymphatic loads. Lymphedema occurs when the "transport capacity" of the lymphatic system is reduced or impaired and the excess lymph is unable to drain from the tissue.

Primary Lymphedema can be present at birth or develop at the onset of puberty or adulthood. Its onset is usually idiopathic. It can also be a result of vascular problems such as hemangioma (a benign tumor of dilated blood vessels), lymphangioma (a tumor composed of lymphatic vessels),or Port Wine Stains.ii

In Secondary Lymphedema, the lymphatic system is unable to disperse the lymphatic load due to obstruction or "interruption" of the flow of lymph. The most common cause of secondary Lymphedema is surgical removal of lymph glands. This is usually due to surgery necessary for treatment of melanoma, breast, head and neck, prostate or testicular, bladder or colon cancers.

All of these surgeries currently involve removal of lymph nodes as a matter of course. The possibility of the onset of Lymphedema can be exacerbated by scar tissue from cancer radiation treatment. Other less common causes of this condition are vein harvest for coronary artery by-pass operations; the use of the cancer drug Tamoxifen, which can cause primarily lower-limb Lymphedema due to blood clots and deep venous thrombosis; air travel in post-cancer surgery patients due to decreased air pressure in plane cabins; and lymphangitis (an infection of the lymph vessels).

The symptoms of Lymphedema can present immediately post-operatively, or weeks, months or even up to 30 years after the initial disruption of lymph flow. It is estimated that 25-40% of breast cancer survivors develop Lymphedema within five years of initial treatment.i

According to the National Lymphedema Network, the most common symptoms to watch for include: a "full" sensation in the limb, tight-feeling skin, decreased flexibility in hand, wrist or ankle, and difficulty fitting into clothing in one specific area. If persistent swelling is noticed, it is very important to seek prompt medical advice and get at least one second opinion. The sooner this condition is diagnosed and treated, the better the prognosis.

Lymphedema develops in a number of stages, from mild to severe, referred to as Stages 1, 2 and 3.

Stage 1, considered "spontaneously reversible" is described as "the pitting stage". This means that when the affected area is pressed by fingertips, the area becomes indented and holds the indentation. At this stage of the malady, the affected area is either normal or near normal size upon rising in the morning.

Stage 2, referred to as "spontaneously irreversible" is described as the tissue having a "spongy" consistency and is "non-pitting" meaning no indentation is formed when it is pressed with the fingertips. This is due to the fibrosis in the tissue that is caused by the increase in volume of stagnant lymph in the affected area. The limb(s) begins to become hard and increases in size.

Stage 3 is referred to as "lymphostatic elephantiasis". By this stage, the tissue has become hard and "unresponsive". The limb(s) has become large and loss of function may be beginning.

Left untreated, the edematous area(s) " become a perfect culture medium for bacteria and subsequent lymphangitis…untreated Lymphedema can lead to a decrease or loss of functioning of the limb(s), skin breakdown, chronic infections and …irreversible complications. In the most severe cases, untreated Lymphedema can develop into a rare form of lymphatic cancer called Lymphangiosarcoma."[vii] Therefore, proper diagnosis and treatment are essential to the health and well-being of the Lymphedema patient.

There are many forms of treatment currently in use for reducing symptoms in the Lymphedema patient. The most common forms are mechanical intervention, which includes the use of compression garments and pumps and various forms of massage therapy; and nutritional guidance and supplementation. Surgical interventions have been used in the past but are not recommended because they have shown little success and have led to many serious complications such as skin necrosis (skin death), infection and sensory dysfunction.[viii]

Mechanical intervention is the most "mainstream" and common form of treatment used in the United States. These modalities include simple elevation of the affected limb; use of multi-layered compression bandages and custom-fitted pressure- graded garments; a form of massage therapy called Manual Lymph Drainage (MLD); exercise; and meticulous skin-care. When combined, these modalities are known as Complex Physical Therapy or Complex Decongestive Therapy.[ix]

The simplest treatment is limb elevation. It is commonly recommended that the Lymphedema patient keep the affected limb or limbs elevated above the level of the heart whenever possible. As stated by Dr. Gregory T. Lawton in Homeosomatic Medical Manual Therapy Lymphedema Program Volume IV, "Water generally flows to the lowest elevation point. The purpose of using elevation in Lymphedema technique is to use this principle of physics to aid in movement or flow of body fluids from the most distal points to the centrally located lymphatic collection centers." This is one treatment that is easily performed by the patient herself, whenever possible.

The use of compression garments (such as sleeves, stockings and pneumatic pumps and bandages) can be effective in the management of Lymphedema. These garments assist in limiting edematous "build-up" by providing light external vascular pressure to reduce stagnation of lymph fluid. The use of this modality must be supervised by a trained professional but can be performed by the patient once proper fitting and instruction have been provided. This treatment is further explained in An Overview of Lymphedema. "Compression garments should always cover the entire area of edema. For example, a stocking that reaches only to the knee tends to become tight and occludes lymphatic and venous return if there is significant edema in the thigh. Extremity pumps that use intermittent sequential pneumatic compression may also be helpful in the management of the edematous limb, though many feel such pumps are ineffective and potentially counterproductive. The cuff is alternately inflated and deflated according to controlled time cycle. This action increases fluid flow in the veins and lymphatic vessels and prevents the accumulation of residual fluid in the limb. Compression pumps should be used only under the supervision of a trained health care professional. High external pressure can damage superficial lymphatic vessels. Furthermore, when using compression pumps and other techniques, caution should be taken if there is a potential for residual tumor which some theorize may be mobilized into venous or lymphatic channels."

The previous statement emphasizes the care that needs to be taken in all forms of compressive therapy. Lymphatic decongestive therapy includes many forms of "massage" therapy.

Emil Vodder, a Danish massage practitioner and doctor of Philosophy, first introduced the practice of Manual Lymphatic Drainage in the early 1930's. It involves a "series of light, rhythmic manipulations in order to stimulate lymph flow and fluid movement".[x] Joachim Zuther, founder and director of the Academy of Lymphatic Studies in Florida states in his article Traditional Massage Therapy in the Treatment and Management of Lymphedema, "Massage therapy increases the amount of lymphatic load and can have negative effects on Lymphedema if applied incorrectly…The term "massage" means "to knead" and is used to describe forms of "classical" or "Swedish" massage. The word is often misused to describe the techniques of manual lymph drainage, which is a gentle manual treatment technique…The basic strokes in

massage (e.g., petrissage, effleurage, tapotement, vibration and friction) are generally applied with more pressure than MLD techniques and are not limited to suprafascial tissue but also cause reactions in subfascial areas such as muscles, tendons and ligaments. Superficial lymphatics are extremely vulnerable to external pressure. Traditional massage techniques can cause focal damage to anchoring filaments and the endothelial lining of lymph vessels" In addition, Zuther theorizes that the increase in blood flow that traditional massage techniques produces may cause a further addition to the lymphatic load and thereby produce more swelling. He goes on to say, "the application of massage techniques (any technique that may cause an increase in arterial blood flow) in lymphedematous limbs and bordering trunkal quadrants may trigger the onset of Lymphedema or worsen existing Lymphedema."

Dr. Lawton states, "massage and manual therapy technique must be slow and gradual and it must be delivered to both the level of comfortable tolerance of the patient and with a light enough pressure that allows protein and fluid shifting, and that does not further compromise or injure the lymphatic vessels. Clinical opinions differ regarding how much pressure is too much pressure, however, the skilled and experienced massage or manual therapist will know, based on training and patient feedback what degree of pressure is effective and beneficial For patients who present with a high degree of sensitivity to massage and manual therapy elevation combined with passive repetitive movement and motion of a joint is another highly effective treatment modality." Again, whatever form of compression therapy is used, attention to tissue reaction and patient feedback is important to successful treatment.

As previously stated, muscular activity and movement are essential to the movement of lymph fluid through the lymphatic system. Gentle exercise can also be very beneficial when incorporated into a Lymphedema treatment plan. An exercise routine, approved by the patient's health care provider, involving low-impact flexibility and stretching exercises can be useful in minimizing tightness and possible scarring of the affected area. Cardiovascular exercise is encouraged. Increased respiration enhances venous and lymphatic return. In some cases, the addition of weight-resistance exercises can be beneficial in improving muscle tone and strength. It is extremely important that exercise be performed with great care and the prescribed bandaging is worn. As discussed previously, it is possible to increase fluid and the lymphatic load by increasing arterial blood flow. Tissue tears and inflammation can also occur if exercise is performed too vigorously. Swimming is a good exercise for the Lymphedema patient, particularly because of its low-impact nature. It is unnecessary to use bandages while swimming due to the external pressure the water exerts on the body.

It is very important for the Lymphedema patient to practice meticulous skin-care. Edematous skin is prone to injury and infection. The skin must be cleaned and moisturized daily. It is important to avoid injury of the affected area. Use of electric razors, gloves for cooking and gardening, and liberal application of sunscreen are recommended. Avoidance of temperature extremes, constriction on the affected limb (i.e. tight socks, jewelry, blood pressure cuffs), and puncture wounds is very important. It is important to test for temperature of water for bathing and cooking with an unaffected extremity due to possible diminishment of sensation.

It is the opinion of people from many backgrounds that the systems of the body are affected most by what is ingested through the air we breathe, the food we eat and the water we drink. The

human body in the modern era is bombarded with innumerable external toxins. These toxins must be processed in addition to the internal toxins that are produced through digestion, muscle movement and cellular activity.[xi] Dr. Bernard Jensen, PhD., D.C. wrote "Every tissue in the body is fed by the blood which is supplied by the intestines. When the intestines are dirty, the blood is dirty and so are the organs and tissues. It is the intestinal system that must be cared for, first, before and effective healing can take place."

Peter Glasser, MLDT, LMT, ICMT of the Ultimate Health Center in Asheville North Carolina uses body detoxification to "support and enhance" CDT and manual lymph drainage therapy. This involves the use of herbal cleanses as well as vitamin, mineral and anti-oxidant support. With the use of herbal cleanses, Glasser has found "when an herbal cleanse is initiated before treatment begins, treatment time itself is shortened, and results are improved." The cleansing process is said to remove some of the toxins in the blocked lymphatic fluid and aid in lymphatic drainage.

Other forms of "nutriceuticals" have been found to be effective in treatment of Lymphedema. Horse Chestnut, Grape Seed Extract, Burdock Root, and digestive enzymes have all been used with success in treating this malady. They also have been shown to have few, if any, side effects.

According to the Physician's Desk Reference for Herbal Medicines, "Horse Chestnut (herb) has an anti-exudative, vascular tightening effect, and reduction of vascular permeability which result in and antiedemic effect. The vein-toning properties of the Horse Chestnut extract also demonstrated improvement of venous return flow…the edema reduction effect and reduction of leg volume with edema provocation if the Horse Chestnut extract were both statistically significant.[xii]

Grape Seed extract (PCO or Pycnogenol), has been shown to reduce capillary leakage, inflammation and subcutaneous edema. In a 2002 clinical trial for venous insufficiency by R. Koch,"pycnogenol significantly reduced the circumference of the lower limbs and significantly improved subjective symptoms."

According to the PDR for Herbal Medicine, Burdock root has been shown to "relieve congestion of the lymphatic system. It also cleanses the blood by eliminating uric acid and excess waste materials."xii

Peter Glasser also uses a product called Infla-Zyme Forte which consists of digestive enzymes including pancreatin, bromelain , papain, trypsin, and chymotrypsin. The theory behind this treatment is "digestive enzymes taken on an empty stomach reduce the accumulation of protein and fats in the lymphatic system and connective tissue. Edema is reduced and fibrotic tissue softened…Results may take between 2 to 3 months to be noticeable but are worth pursuing. Digestive enzymes are recommended for use before, during and after treatments, until the limb or affected area is close to normal size. At that point the inflammation and proteins, fats causing it will be under control."[xiii]

A healthy diet is essential to overall health, as well as treatment of disease. Maintaining optimal

weight is extremely important for the Lymphedema patient. A diet high in complex carbohydrates and fiber, especially high fiber legumes is recommended for those affected by Lymphedema. Adding foods with anti-inflammatory properties such as garlic, onions, olive oil, and spices such as turmeric and curcumin may be beneficial as well. Ginger and cayenne have properties that aid in circulation and foods high in potassium such as bananas, oranges and wheat germ will help reduce fluid retention.xiii Adequate water consumption is also a key component to fluid balance.

Lymphedema is a life-altering diagnosis. It can cause discomfort, disfigurement and disassociation. The Lymphedema patient may become isolated because of embarrassment disfigurement can cause. This may even alter his or her motivation to seek help and treatment. It is essential that family, friends and health-care practitioners are aware of the emotional state of the afflicted person and that the patient receives education and support. As have been discussed, there are treatment choices that can improve the patient's quality of life. With the proper education, treatment and support, Lymphedema can be managed.

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[i] Lymph Notes

[ii] Saskia R.J. Thiadens, R.N.. www.lymphnet.org. National Lymphedema Network, 2005

[iii] Brennan MJ: Lymphedema following the surgical treatment of breast cancer: a review of pathophysiology and treatment. J Pain Symptom Manage 7 (2) 110-6, 1992.

[iv] Homeosomatic Medical Manual Therapy. Lymphedema Program- Volume IV, Ninth Edition, Gregory T. Lawton, D.N, D.C..

[v] Clinically Oriented Anatomy, Fifth Edition, Keith L. Moore, PhD., F.I.A.C., F.R.S.M., Arthur F. Dalley II, PhD..Lippincott, Williams and Wilkins, Philadelphia, Pa.,2006,p44-46.

[vi] Olszewski w. Peripheral Lymph: Formation and Immune Function. CRC Press, Boca Raton, FL 1985.

[vii] National Lymphedema Network, What is Lymphedema? A Brief Overview, www.lymphnet.org.

[viii] Savage RC: The surgical management of Lymphedema. Surg Gynecol Obstet 160 (3): 283-90, 1985.

[ix] An Overview of Lymphedema, Medical Reference Information and Links for Physicians.www.lymphedemapeople.com/medical/An_Overview_of_Lymphedema.htm

[x] Dr.Vodder School North America Website,www.vodderschool.com

[xi] The Importance of Body and Lymphatic Detoxification in the Treatment of Lymphedema, Brady, Diana. www.iamts.org , 2006.

[xii] Jaenicke, C., Gruenwald, J. Brendler, T. (2000). PDR for Herbal Medicine, Second Edition. Montvale, NJ: Medical Economics Company.

[xiii] Natural Remedies to Compliment CDT, Diana Brady, MA, CNC, in conjunction with Peter Glasser, LMBT. www.uhealthnet.net