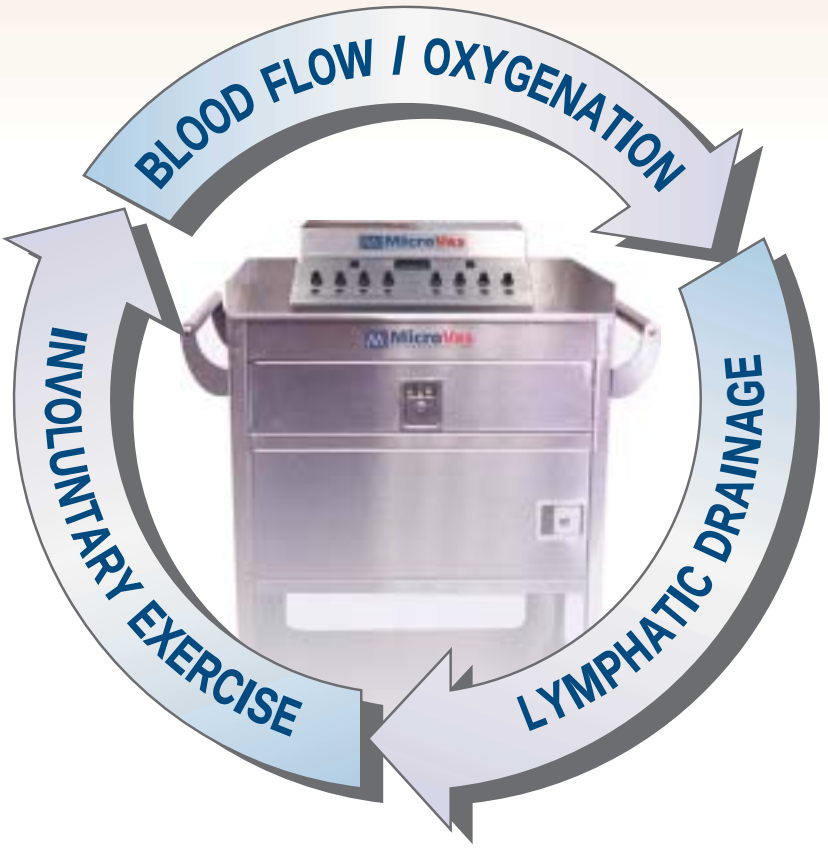
One Simple Idea, Three Modalities, Many Applications



Increased Blood Flow and Tissue Oxygenation

MicroVas increases blood flow and tissue oxygenation which dramatically impacts fibroblast proliferation and collagen production to accelerate the wound healing process. Soft tissue injuries heal faster and rebuild muscle fiber better with adequate oxygen and nutrients

Lymphatic Drainage

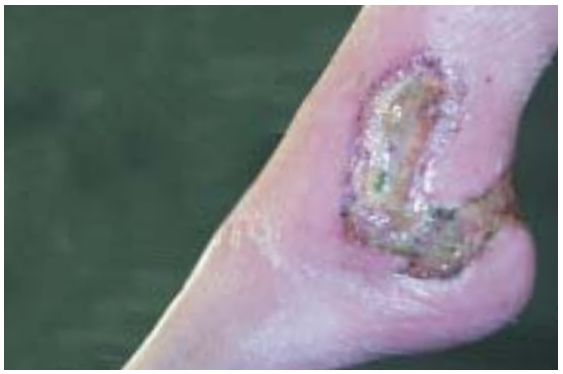
Edema and lymphedema are dramatically reduced through MicroVas-induced lymphatic drainage (up to a 2" reduction in circumfrence in one treatment). Post-injury inflammation can be reduced. Carpal tunnel (and similar conditions) can be non-surgically decompressed.

Involuntary Exercise

MicroVas-induced involuntary exercise elevates the metabolic process, can restore disuse atrophied muscle, emulate Kegel exercises to address incontinence, constipation and erectile dysfunction. MicroVas neuromuscular stimulation also helps to block pain.

*All quotes are taken from letters and articles written by physicians or patients. No double-blind randomized trials have taken place. Evidence is anecdotal at this time.

A Powerful Wound Healing Therapy



RSD and Pressure Ulcers:
A Challenging Combination for Wound Healing

Patient Is Unable To Tolerate Debridement , Topical Gels, Wet Dressings and Even Some Bandages!

The patient, a 57 year old woman, suffered a minor fracture of her tibia and was given a plaster cast as part of her treatment. The pressure of the cast coupled with the patient's poor circulation, combined to create a pressure ulcer that ran down the side of her ankle, wrapped around the heel and up the other side of her ankle.

To compound the situation, or perhaps triggered by the series of events, the patient also developed Reflex Sympathetic Dystrophy (also known as Complex Regional Pain Syndrome) marked by a heightened sensitivity to dermal contact. The condition persisted even following spinal blocks for pain. Since she was unable to undergo debridement, or tolerate the use of topical dressings, her physician referred her to a MicroVas treatment center.

*MicroVascular Therapy (**MVT**) stimulates autolytic debridement and manages pain. At the MicroVas Treatment Center, the patient received **MVT** three times a week which did not cause her pain. At one point, the therapist tried a simple saline gel and the patient reacted with extreme pain (10/10) and it had to be washed off immediately.*

*Subsequently, the treatment regimen consisted of MicroVas treatments and sterile gauze dressings **only**. The photos at left show her remarkable progress over a 60 day time period.*

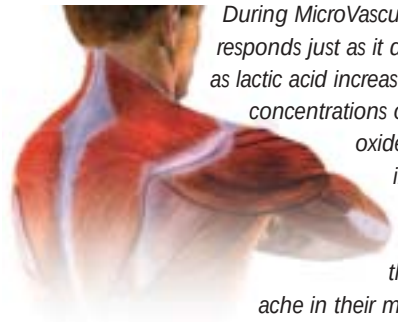
CHRONIC DIABETIC FOOT ULCER

A 63 year old male diabetic was suffering from a non-healing foot ulcer which had persisted for two years despite a vigorous program of traditional wound care. He had already lost two toes and was facing the possibility of foot amputation within a relatively short time. He was treated at HealthSouth Rehabilitation Hospital of Tulsa, Oklahoma.

*After MicroVascular Therapy (**MVT**) five times a week for ten weeks, the ulcer was completely healed and his foot was pain free. Examined several months after treatment, it appeared the same as in the photo at far right.*

The Benefits of Involuntary Exercise:

MicroVascular Therapy (MVT) creates strong contractions in skeletal muscle which can benefit patients with problems relating to muscle tone, disuse atrophy, tissue damage and/or strength.



*During MicroVascular Therapy (**MVT**), the body responds just as it does with exercise: the Ph falls as lactic acid increases, local temperature increases, concentrations of adenosine, potassium, nitric oxide and other local metabolites increase. After several minutes the muscles begin to feel fatigue and the next day the patient may feel a slight ache in their muscles just as they might after a workout.*

Sprains/Strains: Sports Injuries and Accidents

*The most common form of injury is the sprain (tear in a ligament or joint capsule) or strain (tear in a muscle or tendon). Not only can **MVT** give the equivalent of simultaneous multiple massage therapists in action, but it massages at a deeper level and, unlike therapists, does not tire. Muscles are working at a level unreachable by external manipulation.*

*More important than the massage, however, is the ability of **MVT** to bring additional blood flow and tissue oxygenation which, in turn, promotes collagen production, enhances proliferation of fibroblasts and increases white blood cell fighting capacity to accelerate healing and tissue rebuilding.*

***MVT**-induced involuntary exercise also increases lymphatic drainage which can help reduce edema and the temporary swelling of post-injury inflamation.*

Pelvic Floor Problems

*Incontinence, constipation and even erectile dysfunction can be helped by pelvic floor exercises, commonly called Kegel exercises. **MVT**, using 8" x 10" emitter pads posterior and anterior, provide involuntary Kegel exercises. One forty-five minute MicroVas treatment is the equivalent of three days of Kegel exercise at the NIH recommended level of fifteen minutes per day (5 minutes, three times daily). One of the biggest difficulties with Kegel exercises is having a patient who actually will (or can) do the recommended fifteen minutes per day. **MVT**, in addition, will tone and re-educate the bladder muscles, which are beyond the scope of Kegel exercises.*

Spasms

*Muscle spasms, plus their resultant "knotting" and pain have been dramatically reduced or eliminated through **MVT**. It is felt that **MVT** accomplishes these results through three levels of action:*

1. *Massaging action of the contractions.*
2. *Neurological blocking.*
3. *Increased blood flow to deliver oxygen and help remove acid and kinins.*

Disuse Atrophy

*Disuse muscle atrophy and the resultant muscle contracture is a common problem with bedfast or wheelchair-bound patients as well as those with post-polio syndrome. **MVT**, through muscle re-education and increased metabolism brought about through involuntary exercise, have helped some patients regain ambulation after two to three weeks of daily treatments.*

MicroVascular Therapy and the Stages of Healing

MicroVascular Therapy (**MVT**) exerts a positive force for healing in all three stages of the healing process:

INFLAMMATION:

Through contraction of skeletal muscle, MVT increases lymphatic drainage to decrease swelling. According to Guyton's Textbook of Medical Physiology, exercise: "increases lymph flow as much as 10-fold to 30-fold." Increased lymph flow also boosts immune responses.

PROLIFERATION:

Increased blood flow/tissue oxygenation has a profound effect on the proliferation stage helping to boost the proliferation of fibroblasts, increase collagen production and the development of neoangiogenesis.

REMODELING:

Through MVT-generated isometric exercise, muscles are kept toned without joint movement or overloading.

One Doctor's Experience

Comments on my experience using MicroVas in a hospital and in private practice.

Jack Brown, M.D., D.P.M.

I have personally used the MicroVas to treat more than eight hundred patients with various conditions as outlined below. This figure includes patients at HealthSouth Hospital in Tulsa, and in my private practice in Sand Springs, Oklahoma.

Diabetics with peripheral neuropathy and foot ulcers

The MicroVas technology has demonstrated remarkable efficacy in the treatment of difficult, long-term, non-healing ulcers. Stage 3 and 4 ulcers, some of which were more than two years old, were completely healed in as little as three to ten weeks.

Patients suffering from poor circulation and vascular insufficiency, with blue to purple feet and toes, have seen their color restored to a healthy pink in four to six weeks. As a Podiatrist and M.D., I have been treating neuropathy for twenty-five years and I have found nothing that reduces or relieves it as MicroVas has done for my patients.

This technology can save limbs. I'm confident that I have helped more than one hundred twenty five people avoid amputation of feet and legs through the use of MicroVas.

Bedfast patients with decubitis/pressure ulcers.

I treated fifty to sixty patients at HealthSouth with ulcers in the sacral area—a difficult wound to heal. Progress was marked by improvement in color (sometimes noticeable after the first treatment), granulation and reduction in area. Most were completely healed

Musculoskeletal conditions: sprains, overuse, and degenerative joint disease

MicroVas has been dramatically effective in treating sprains and sports injuries in terms of pain alleviation as well as accelerated healing of inflamed muscle tissue and reduction of swelling. Golfer's elbow, tennis elbow, and carpal tunnel syndrome have all been treated successfully.

I have witnessed MicroVas efficacy many times in treating inflammatory processes such as patella tendonitis, chronic tendonitis of the foot and ankle, tendonitis of the wrist and elbow and bursitis around the shoulder, knee and hip.

Spider bites and other non-typical applications

A patient who had been bitten by a brown recluse spider with development of a chronic pseudomonas wound had been treated by several other doctors without effect. She was then referred to me and presented with a large, infected area, and puffy, sloughing skin with a greenish discharge. In addition to antibiotics, we began MicroVas treatments five days a week for three weeks. The wound was reduced in size, improved in color and the drainage stopped. She was then referred for a skin graft.

I treated another patient with chronic osteomyelitis of the maxilary sinus who had been to many doctors seeking relief. After five MicroVas treatments, improvement was felt by the patient. One month later, an examination report sent to me from the patient's ENT specialist reported:

> "Endoscopy today…There is no exposed bone. This appears to have healed over and I can see fresh granulation tissue which is well healed and smooth with no infection, over the previously exposed bone that had been there for about two months prior to this treatment."

General comments and observations on MicroVas

There have been no adverse reactions, complications or any safety issues during these four years and hundreds of patients—a 100% safety record. In cases with infections, I use high doses of antibiotics with MicroVas treatments and I believe that a large part of its efficacy lies in the fact the MicroVas improves arterial circulation and delivery of antibiotics to the wound area, thus boosting its efficacy. In fact, since MicroVas enhances blood flow, it would seem that it is an effective adjunct in most types of healing situations.

What MicroVas has meant to my private practice

Financially, the MicroVas system has been very beneficial to our practice. Some physicians might think they will have trouble generating the patient volume to justify having this technology in their office. What I have found is that the MicroVas treatment system actually generates more patients through word of mouth advertising. If you are offering a unique and beneficial service, patients who are looking for relief or healing, will find you. (Many are glad to find a drug-free method of pain relief.) The beneficial effects of MicroVas on my practice and in the lives of my patients are truly remarkable, far beyond my expectations.

Dr. Brown is the former wound care director at HealthSouth Rehabilitation Hospital of Tulsa. Dr. Brown is not a stockholder in MicroVas nor does he receive any compensation from MicroVas.

TUNNEL SYNDROMES

Carpal / Cubital / Fibular / Tarsal

Carpal tunnel syndrome, and the other tunnel syndromes, have become a major source of lost productivity and a growing financial drain on the American economy. Many occupations now involve repetitive stress which can cause peripheral nerves, as they cross known areas of anatomic narrowing (carpal, cubital, fibular or tarsal tunnels) to become irritated because of this stress. The irritation gradually develops inflammation and the resultant build-up of interstitial fluid creates a region of increased pressure which compresses the nerve.

This compression causes a pinching effect which decreases blood flow to the nerve and results in a relative ischemic condition that produces paresthesia, numbness or pain.

MicroVascular Therapy (MVT) perfuses the treatment area with increased blood flow, raising tissue oxygen tension levels to counter the ischemic state. MVT also improves lymphatic flow to reduce the interstitial pressure, reduce nerve compression, ammeliorate inflammation and facilitate a return to homeostasis.

(For diabetics, there are additional metabolic changes in the peripheral nerves which can exacerbate chronic pressure in tunnel areas: increased water content within the nerve as the result of glucose being metabolized into sorbitol, and a decrease in the slow anterograde component of axoplasmic flow.)

ADHESIVE CAPSULITIS HEALED IN FOUR WEEKS

CASE STUDY

Patient insists that arm cannot be moved—"it's just too painful." Receives no physical therapy until after third treatment.

CONDITION:

Patient presented with severe pain in right shoulder and limited range of motion. She was holding holding right arm rigidly and indicated a desire that it not be moved. An MRI on 3/31/03 indicated a possible tear in the bursa. Some swelling was present. The patient's main concern was that, because of pain (5 to 7/10) in right shoulder, neck and back, she was unable to work and, more importantly, was unable to pick up, dress and care for her 17 month old child.

Previous treatment had included two months of physical therapy, deep tissue massage and chiropractic manipulation. These modalities initially helped a little, then the condition worsened.

TREATMENT:

3/25- Initial exam and first treatment. Patient to receive MicroVas treatments three times weekly. After first treatment patient reported decrease in pain. Shoulder flexion increased 15%. Because of patient hypersensitivity, no physical therapy was used.

3/27- Pain level rates 4/10. Patient was able to adjust rearview mirror with right hand. Previously had to reach across with left hand. Patient reports sleeping better, less neck stiffness.

4/4- Patient excited about regaining full range of motion (flexion) in right shoulder. Still some limitation in abduction (80º). Pain level decreased to 3/10. Patient does not experience decrease in pain immediately after treatment, but later.

4/7- Patient reports pain level down to 2/10. Abduction now up to 90º.

4/9- Patient "very pleased" with results of MicroVas treatments, "feels good." Performed deep tissue massage to neck and upper back. Referring physician (orthopedic surgeon) prescribes additional week of treatment.

4/16- Patient still "feels great," pain rates 1/10. Discussed strength and functional training with program of home exercises.

4/30- Patient reports no pain anywhere in neck, shoulders or upper back even when lifting her child or while at work. Reports weakness in shoulders.

POST-SURGERY WOUND HEALING

Incision, **four months** after the operation

Following 21 MicroVas treatments

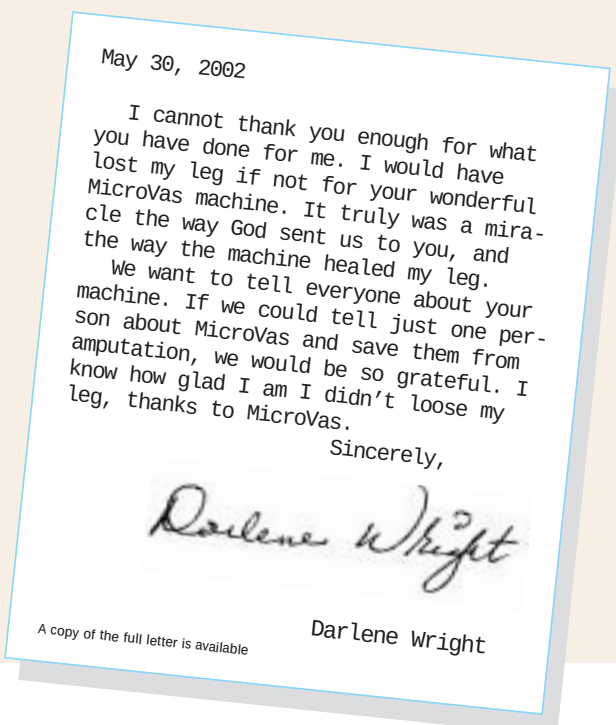
Leg healed, amputation avoided.

The patient is a 53 year old female diabetic who slipped and fell on some stairs at a friend's house in Vian, Oklahoma. The fall resulted in a compound fracture of the leg with significant trauma to the surrounding tissue, including a four inch opening in the skin. She was transported to St. Francis hospital in Tulsa where she was seen by the orthopedic surgeon on call, Dr. Jay Lorton of Eastern Oklahoma Orthopedics. Since the bone (tibia) had a 6"crack, the doctor was unable to place a supporting rod inside, which would have been his preference. Instead, he used plates attached with screws to stalilize the break. Sixteen weeks later, because of poor circulation, the wound was showing no signs of healing, as shown in photo number 1. The patient was told that amputation was almost a certainty. Then, through a friend at her church, she heard about MicroVas.

After the patient began MicroVas treatments, the effects were quickly apparent. Not only was the wound healing, but the crack in the bone was also healing. After 21 MicroVas treatments, the patient was examined by her Doctor who was surprised to see tahat the 6" crack in the tibia was totally healed. Skeptical of the x-rays, he ordered an MRI which confirmed the x-ray finding: the 6" crack in the tibia was gone.

The doctor then scheduled a second operation to remove the plates and screws and place a rod in the tibia. During the second operation the patient required two units of blood — a sure sign of restored circulation in the leg.

Further MicroVas treatments brought about healing as shown in photo three. The patient wrote us a heartfelt letter after the procedure was complete.



May 30, 2002

I cannot thank you enough for what you have done for me. I would have lost my leg if not for your wonderful MicroVas machine. It truly was a miracle the way God sent us to you, and the way the machine healed my leg.

We want to tell everyone about your machine. If we could tell just one person about MicroVas and save them from amputation, we would be so grateful. I know how glad I am I didn't loose my leg, thanks to MicroVas.

Sincerely,

Darlene Wright

Darlene Wright

A copy of the full letter is available

Simple, Non-Invasive Physical Medicine Has Many Applications For Healing

THREE SIMPLE METHODS:

Increased Circulation

Perfuses tissue, elevates oxygenation: aids in fibroblast proliferation, collagen formation, transcapillary exchange of nutrients; aids delivery of systemic antibiotics.

Involuntary Exercise

Retrains and rebuilds muscle, aids in flexion, elevates metabolism.

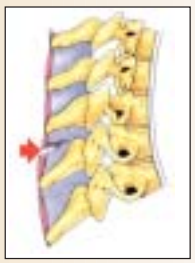
Lymphatic Drainage

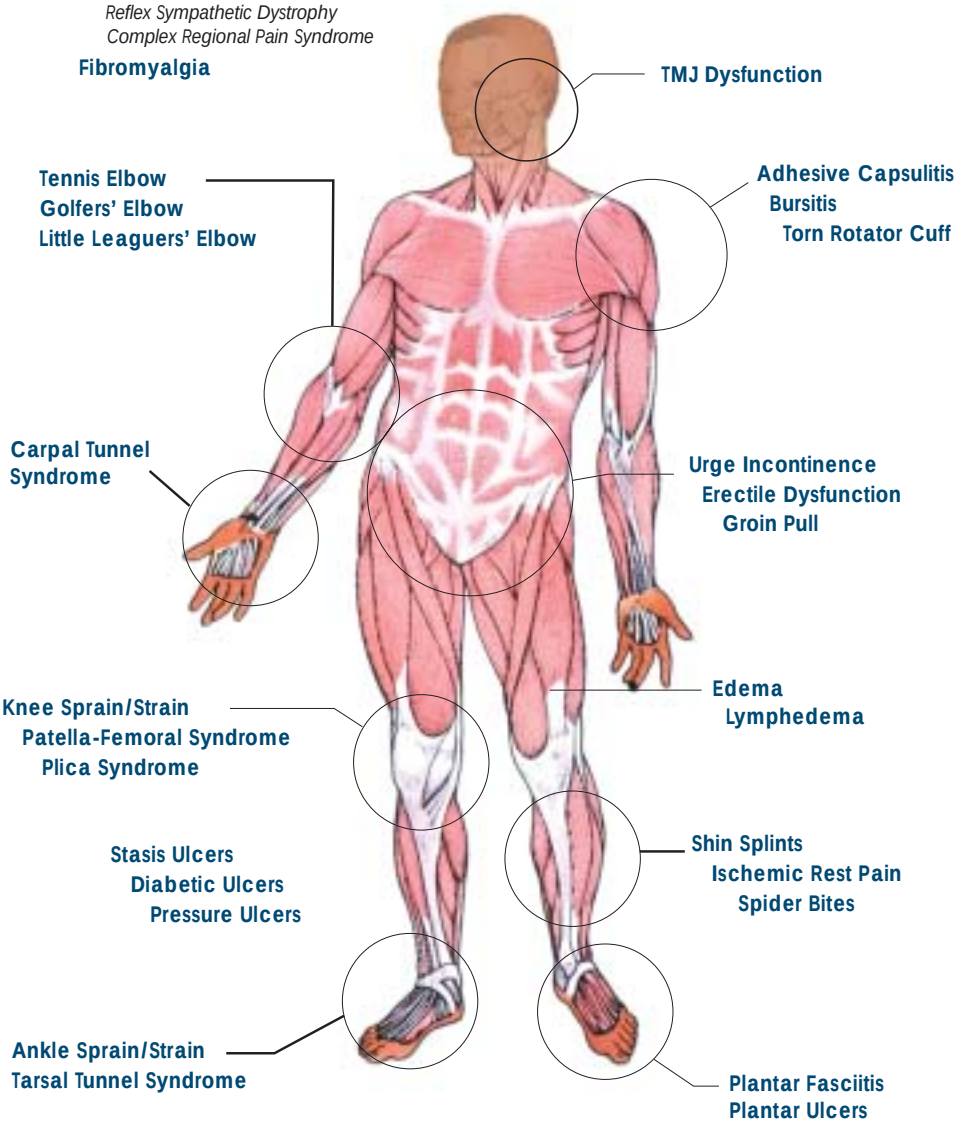
Relieves swelling and inflammation, decompresses nerves in constricted spaces, boosts body's immune responses.

Whiplash

(Cervical Strain) Typically caused by a violent tackle or auto accident.

MicroVas therapy not only alleviates pain, but, through tissue oxygenation, aids in collagen production and proliferation of fibroblasts to rebuild the torn ligament and muscle fibers.

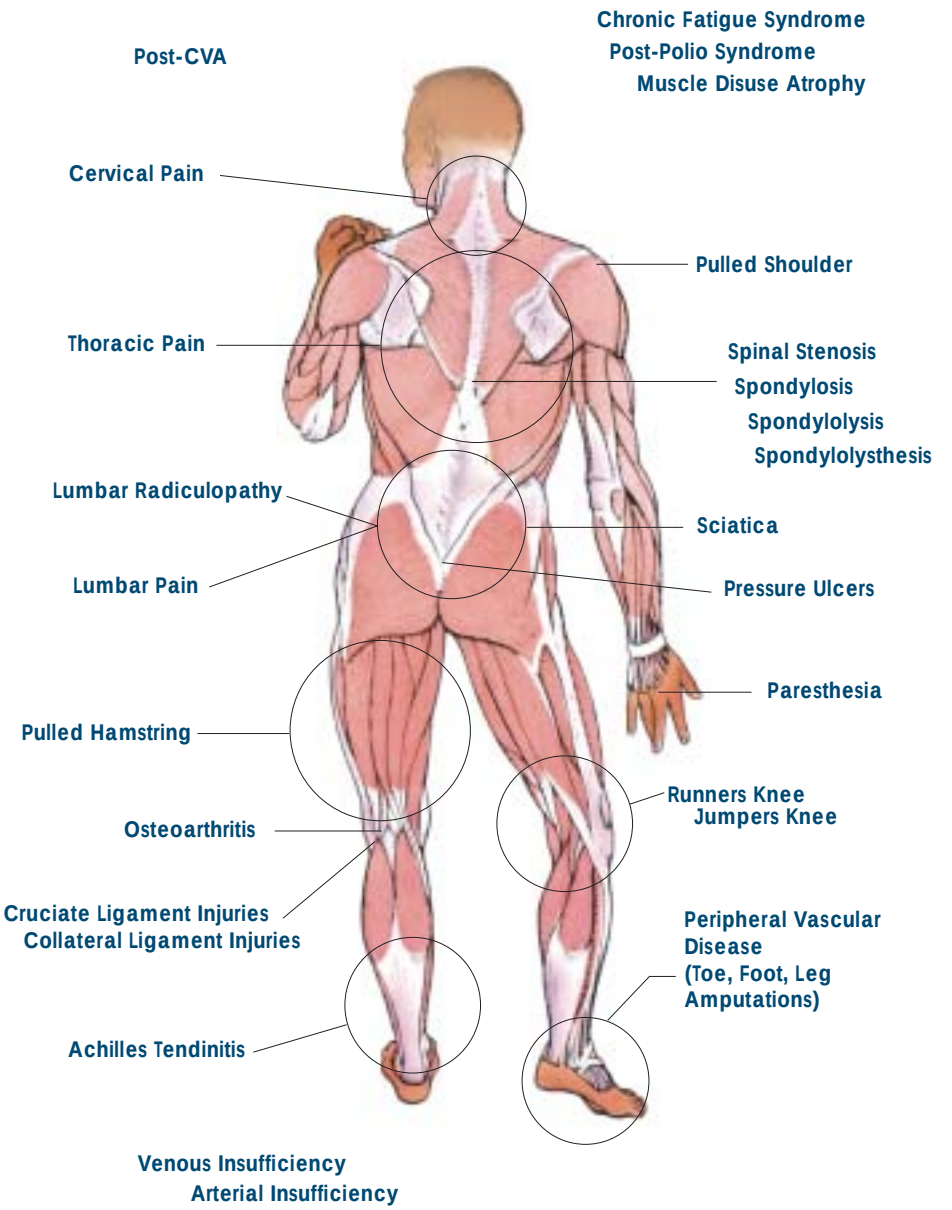




Plantar Fasciitis

MicroVas therapy enhances lymphatic drainage to reduce local pressure and restores blood flow/oxygenation to tissue and nerves. With pressure reduced and circulation increased, angiogenesis contributes to stabilization and homeostasis. Palliative effects of MicroVas therapy include the blocking of neurological transmission of pain signals and stimulation of endorphins.

Simple, Non-Invasive Physical Medicine Has Many Applications For Healing



Surgeon With Lumbar Radiculopathy

Any skepticism I had about MicroVas was alleviated by my own personal use of MicroVas for an intractable lumbar radiculopathy, which was not relieved by drugs, physical therapy or epidural steroid injections. After twelve MicroVas treatments, I was pain free and have remained so. When I recently opened my office in Tulsa for the practice of orthopedic surgery, one of the first pieces of equipment I included was a MicroVas system.

MicroVas increases blood flow and tissue oxygenation, stimulates fibroblasts and osteoblasts to promote healing of wounds and bone; treats pain and parasthesias secondary to neuropathies; decreases pain and swelling associated with strains, sprains and arthritis.

This technology offers a new opportunity for conservative treatment of many conditions. In fact, I know of no other technology which has as many applications and benefits to patients, which is non-invasive, without known complications, is affordable as well as reimbursable by third-party payers.

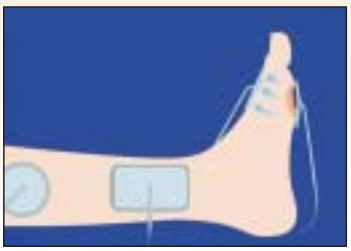
Jerry J. Cole, D.O.
Northeast Orthopaedics and Sports Medicine

Beyond Aquatic Therapy?

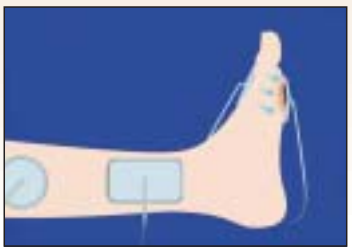
The benefits of exercise for arthritic patients is well documented, however there is an acknowledged need to ameliorate the effects of wear and impact from exercise. MicroVas Therapy provides increased muscle activity, metabolism and blood flow without joint movement. By boosting circulation it is believed that MicroVas therapy positively impacts synovial fluid production for enhanced joint lubrication.

How MicroVas "Delivers Healing" to the Wound

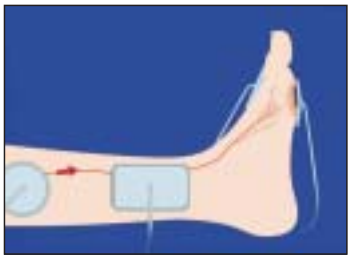
Many healing methods attempt to provide oxygen to the wound externally, using everything from from oxygenated ointments to hyperbaric oxygen chambers.



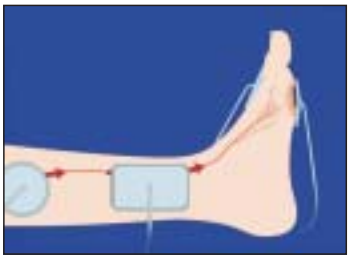
MicroVas, using a unique digital technology, directs powerful electronic waveforms completely through the patient's limb or body, stimulating neuromuscular contractions at the deepest levels



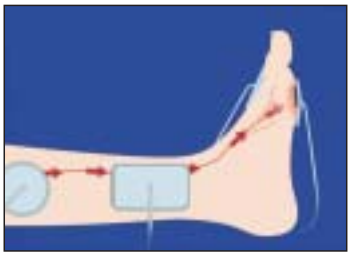
Using groups of emitter pads, the MicroVas System treats an entire limb or body area at once, driving the skeletal muscle pump to increase circulation in the treatment area



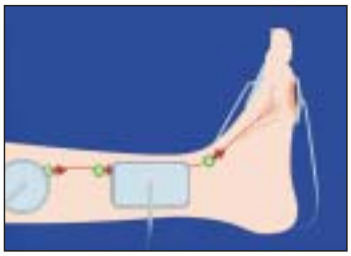
The muscle pump drives the blood to and through the treatment area, perfusing the tissue with a higher level of blood oxygen.



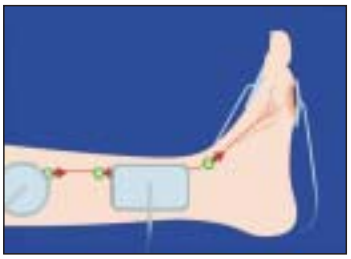
Almost immediately, using a $TCPO_2$ monitor, you should be able to measure an elevated level of oxygen in the treatment area.



As treatments continue, blood oxygen levels should continue to improve, both during treatment and in baseline on a cumulative basis. *(see chart, opposite)*



For many patients, antibiotics are not always effective, in part, because inadequate circulation fails to reach the wound area. MicroVas helps to "deliver" antibiotics to the wound area.



In summary, the MicroVas Vascular Treatment System:

1. ***Improves blood flow/tissue oxygenation***
2. ***Improves antibiotic effectiveness***
3. ***Causes involuntary exercise***

to aid the healing process.

BENEFITS OF TISSUE OXYGENATION IN WOUND HEALING:

- ***Increases fibroblast proliferation***
- ***Improves/accelerates metabolism***
- ***Increases collagen production***
- ***Promotes neoangiogenesis***
- ***Enhances epitheliel migration***
- ***Improves leukocyte killing capacity***
- ***Increases effectiveness of antibiotics***
- ***Decreases tissue edema***

EFFECTIVE WOUND TREATMENT:

The Importance of Tissue Oxygenation In Wound Healing

Hypoxia, a reduction in tissue oxygenation, plays a crucial role in wound healing since it impairs collagen synthesis and prevents fibroblast proliferation and migration While a degree of hypoxia is inevitable in the presence of a chronic wound, the MicroVas Vascular Treatment System can help correct tissue hypoxia to a level that facilitates the demands of the wound and promotes angiogenesis, fibroplasias and epithelialization.

Independent tissue or wound healing has occurred when tissue-oxygen tension ($TCPO_2$) levels are equal to or greater than 30 mmHg. Anything less is considered suboptimal. Consider this:

> *When $TCPO_2$ in hypoxic wounds increases to optimal healing levels, this change has resulted in a sevenfold increase in collagen production as well as enhanced fibroblast proliferation and white blood cell killing capacity.*[3]

How much improvement in blood oxygen can you expect from MicroVas treatments? This varies dramatically from patient to patient, but the chart, below, shows the range of responses from one study:

Average improvement in one treatment: 48%

Average improvement in baseline over 4 weeks: 58%:

Largest improvement in one treatment: 1003%

Largest improvement in baseline, 8 weeks: 157%

$TCPO_2$ readings were taken at: 1. the beginning, 2. after treatment, 3. at four weeks, 4. at eight weeks. The data presented here was not part of FDA double-blind trials and is, therefore, anecdotal. (Patients treated and data recorded at University Health Science Center, Oklahoma City, Oklahoma)

	Day 1		Week 4		Week 8	
	Baseline	End TX	Baseline	End TX	Baseline	End TX
RH	1	3	3	8	-	-
EH	0	2	3	8	5	35
MM	12	24	18	29	-	-
VW	21	36	32	48	54	63
SB	27	27	-	-	-	-
ED	7	21	24	36	-	-
JF	40	46	48	52	-	-
WG	1	8	2	14	-	-
RG	35	45	-	-	-	-
BH	47	56	-	-	48	60
KH	28	46	-	-	-	-
DH	53	60	-	-	-	-
RJ	3	31	-	-	-	-
BK	60	65	-	-	-	-
JR	13	21	-	-	-	-
HL	21	23	-	-	-	-
JM	36	46	-	-	46	51
RM	15	32	-			
MJN	1	1	-			
JN	28	37	-			
AO	30	34	-			
AS	23	25	-			
WT	4	16	-			
DW	40	47	-			
NW	22	62	-			

These photos, taken at University Health Science Center, show a patient's reading on a $TCPO_2$ monitor at start of treatment and three minutes later. He showed an improvement of 5% in three minutes.

CASE STUDY

DIABETIC NEUROPATHY, CLAUDICATION AND EDEMA

Male, Age 64, subsequent to heart attack, vein stripping and lung transplant.

CONDITION:

Patient presented with diabetic neuropathy, venous and arterial insufficiency, claudication and brawny edema in bilateral extremities. Most of problems started after triple bypass surgery and vein stripping in 1999. Emphysema, lung transplant in 2000. Taking immune supression medication

Experiences pain while walking. Stops activity when pain reaches 5/10. **Unable to walk 100 feet without pain.**

TREATMENT:

(4 times per day since patient flew from Ohio to Oklahoma for treatnent

5/5 Patient history & measurements recorded, administered first MicroVas treatment.

5/6 Amazing decrease in left calf edema: 2" reduction in circumference. Patient reports some improvement in sensation as well as decrease in pain.

5/7 Patient reports sensation in both feet. Patient reported walking around office complex before coming in (about1/4 mile). Reports he would have been unable to do this before, would have cramped from car to front door.

5/9 Patient reports continued improvement in sensation and pleased with decrease in swelling. Planning to do some walking, perhaps play golf if improvement continues.

5/10 Patient's lower extremities continue to reduce in circumferential measurements (left calf reduced by 3.25"). Patient feeling some discomfort from return of sensation and resumption of functional mobility.

5/12 Patient reports pain in feet (7/10) due to increased activity: he ***visited the Tulsa Zoo, went shopping at a mall, visited a fleamarket!*** Patient also had some cramping over the weekend as a result of increased walking.

HBO+MVT: TECHNOLOGY DOUBLING

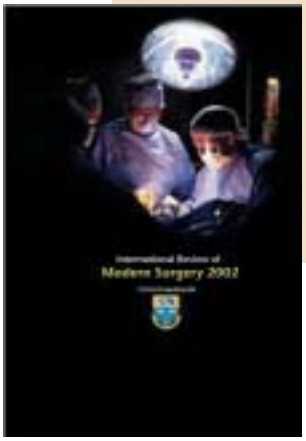
Maximizing the possibilities of tissue oxygenation by administering MicroVascular Therapy inside a Hyperbaric Oxygen Unit.

The muscle contractions induced by MicroVas Therapy, begin a chain of events in the body's metabolism which is beneficial to wound healing:

Increased muscle activity causes an
Increase in metabolism, which causes an
Increase in local metabolites, which causes
Arteriolar dilation, which results in
Capillary recruitment, which

enables the body to capture up to 90% of the oxygen in the haemoglobin versus 25 to 30 percent in the basal state.

Hoping to capitalize on this fact, the Jenks Health Team's Hyperbaric Center installed a MicroVas System through a special coupling device enabling them to administer MicroVas Therapy inside the HBO unit.



How MicroVas Works

Excerpted from the International Review of Modern Surgery

Jefferey Davis, D.O.

Underlying many disease processes is the problem of impaired circulation in the capillary beds. Without blood flow to the tissues, oxygen and nutrients cannot get into the tissues and the waste products of metabolism cannot get out. This puts a severe stress on the tissues causing them to go into a survival mode. The cells use what limited resources they have to stay alive and higher functions, including healing and repair, as well as tissue mediated immunity, become essentially shut down. In most patients with severe disease, measured tissue oxygen levels have been found to be less than normal. Diabetics with impaired basement membrane function, Reynauds phenomena, Claudication states and other similar conditions all may have similar features due to this underlying process.

MicroVas causes muscle fasciculation and contraction-relaxation cycles that effectively pump blood through the microcirculation, draining the venous beds and raising the tissue oxygen levels. This, in turn, supplies the oxygen and substrates necessary to accelerate the healing process. Pressure gradients are actually increased across the capillary beds with MicroVas, in contrast to most of the other technologies on the market today that only dilate the capillary beds. MicroVas has a potent effect on the microcirculation, which results in dramatic responses to treatment. Transcutaneous oxygen probes have demonstrated marked increases in tissue oxygen levels within minutes of initiating treatment. Tissue oxygen levels with successive treatments continue to improve.

MicroVas Stimulates Angiogenesis

The MicroVas electrical form stimulates angiogenesis, that is, budding of new capillaries and generation of denser capillary networks in the tissues. This lays the groundwork for new tissue growth and repair in the healing process. The MicroVas technology also raises the metabolic rate in the treated tissues, which, it is theorized, helps the intimal lining of the arteries to metabolize the excess unused nutrients clogging them. This results in improved blood flow that has been shown to be persistent.

MicroVas has been used on diabetics, with severe ischemic ulcers in the feet, who were destined for amputation. This condition is usually associated with underlying osteomeyelitis, which does not respond well to standard therapy including systemic antibiotics and wound care. MicroVas greatly improves the management of this condition because the enhanced blood flow brings antibiotics and healing to the affected area. As reported by one hospital, treating nearly 700 patients during a two year period, "in more than 95% of cases, the feet have been salvaged." Most of the benefits that were obtained with the treatment were still present at a two-year follow up evaluation.

MicroVas Stimulates Fibroblast Activity

In addition, the MicroVas electrical form directly stimulates the activity of fibroblasts in the healing process. In the healing of ischemic ulcers the fibroblasts act first to build the framework upon which further cell types including skin and capillaries grow. The electrical current of the MicroVas System is a deep penetrating current that affects all tissues from the skin to the bone. Technically, the MicroVas System generates an electromagnetic force field between the emitter pads. (in contrast to the electrical form of some machines that stays superficial in the tissues, affecting primarily the top centimeter or two). The MicroVas System stimulates activity in bone cells as well, which can accelerate fracture healing.

MicroVas Improves Neuropathy

The MicroVas System shows amazing success in improving neuropathy in the feet of diabetics. In follow up on this condition, improvement has persisted out to four years. To our knowledge, there is no current technology or treatment modality that can reverse diabetic neuropathy. This appears to be a therapeutic benefit unique to MicroVas. It is not known yet how this is occurring. It may be due to improvement in the circulation that nourishes the nerves or an unknown direct action on the nerves.

Dr. Jefferey Davis
Is currently practicing emergency care, but has a long standing interest in preventive medicine. He has been consulting with MicroVas for four years.

A copy of the complete article is available

MicroVas Was Featured In HealthSouth's *Outcomes* Magazine

Article written by Gamal Lucius, Senior Physical Therapist for the HealthSouth Rehabilitation Hospital of Tulsa, OK after their completion of a two-year clinical trial.

In November of 1999, HealthSouth Rehabilitation Hospital of Tulsa, Okla., opened its doors to a treatment device for wounds called MicroVas. MicroVas is an electronic therapy system used to increase circulation to an extremity or body part in order to speed wound healing. Since the hospital started using the device, it has made a marked improvement in speeding patient recovery.

The treatment concept itself is not new to the wound care arena. For over a century, healthcare has used some form of electrical stimulation to treat wounds. In the Mid to late 1900s physicians used high-tech, high volt electrical stimulus. The form of electrical current used in the MicroVas device originated in the Navy in the 1970s. It was used to stimulate circulation in sailors who suffered from hypothermia.

Today, the circuitry system used in MicroVas employs a digital current source to create a powerful waveform. The waveform penetrates deep within the body and acts upon the muscle and soft tissue formations. (There is also a modified component in the waveform that acts to stimulate the nerve endings and nerve centers.) Combined, they create a broad-spectrum force field. This field is directed to specific targets by placement of emitter and receptor pads in a position relative to the target areas.

The intensity of the waveform is variable, with treatments lasting approximately 45 minutes. Treatments are performed with little discomfort to the patient. HealthSouth uses MicroVas not only to increase circulation to the extremity or area, but in some cases to stimulate angiogenesis and neurogenesis, which in turn speed wound healing.

The response to MicroVas at the hospital has been phenomenal. In most cases, non-healing diabetic foot or leg ulcers have been completely healed. In one case, a diabetic patient faced possible amputation of almost half her foot due to an infected, gangrenous toe. With only two weeks of MicroVas treatment, daily wound care and assessment, the patient was discharged requiring only the amputation of the toe—the rest of her foot was saved.

A diabetic patient had a large heel ulcer on her right foot, a large wound on her upper left thigh, and several small dehisced areas on both lower extremities from a recent vein stripping surgery. The surgery was intended to improve circulation to her lower extremities. Within the first week of her three-week inpatient stay, all of the dehisced areas on both lower extremity incisions had healed completely. By the time of her discharge, the wound on her upper thigh decreased in size by 70 percent. The heel wound had gone from 90 percent necrotic upon admission to 100 percent granulated and clean with a percent decrease in size. The patient continued wound care and MicroVas as an outpatient for an additional eleven weeks. At the end of her treatments in mid August, all wounds were healed.

95% Total Positive Outcomes

We have reached the two year anniversary of treating patients here at HealthSouth Rehabilitation Hospital of Tulsa, with the MicroVas Vascular Treatment System . . . have had over 95% total positive outcomes with MicroVas —a tremendous success in wound care and pain management.

Thank you for sharing MicroVas with us here at HealthSouth.

Letter from the former CEO
HealthSouth Rehabilitation Hospital of Tulsa
Letter dated November 8, 2001

MicroVas TECHNOLOGIES, INC.

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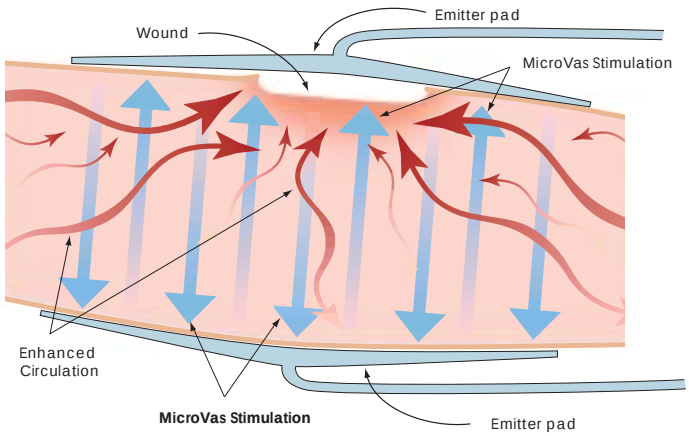
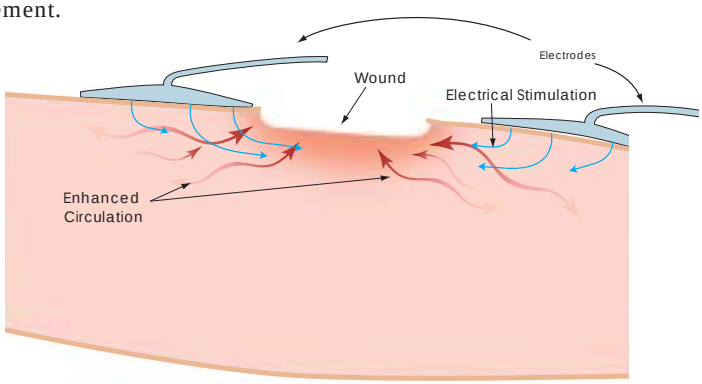
Technologically Advanced Electronics

It's Not Your Father's Oldsmobile:

Traditional electrical stimulation, which is a generally beneficial modality, is significantly different from the MicroVas Vascular treatment system.. The MicroVas System uses emitter pads up to 8"x10" in size, placed 180° from each other in groups of up to 8 pairs. The powerful ionic pulses pass completely through the limb or bod area, creating circulation in the entire treatment area. The MicroVas emitter pads can be placed directly over wounds. The Microvas System elicits a different contractile response from the muscles. The greatest difference, however, is improved outcomes for the patients under treatment.

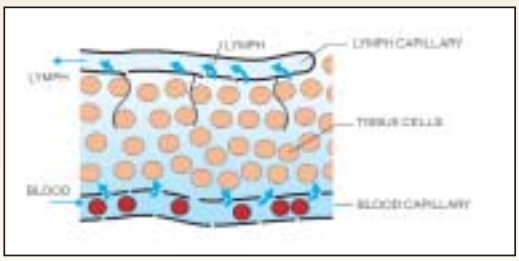


Traditional e-stim uses small electrodes which are placed on the same side of the limb or body, adjacent to a wound. The current penetrates the tissue only a few centimeters. Electrodes are not placed directly on the wound. For the treatment of soft tissue injuries, traditional e-stim generates only a fraction of the muscle action and circulation generated by the MicroVas System. To say that they are the "same thing" is a gross misstatement.



R.I.C.E. and MVT (MicroVascular Therapy)

Get back in the game ***faster***



RICE, or Rest, Ice, Compression and Elevation, is the Gold Standard of sports injury care because it works. But RICE+MVT works even better! Here's why:

After injury, the inflammatory response causes capillaries to dilate.The capillary walls increase in permeability allowing more plasma to leak into the intercellular spaces. The liquid accumulates between cells causing swelling. Icing the wound constricts the capillaries to minimize leakage into the extracellular space and also serves to numb the pain. Icing, however, also constricts the lymphatic vessels and thus slows drainage and by constricting blood flow, diminishes the supply of oxygen and nutrients needed for the proliferation and remodeling stages of healing.

MVT stimulates the lymphatic system to boost drainage and decrease swelling while, at the same time, it promotes blood flow to help deliver more oxygen and nutrients to aid in the proliferation and remodeling stages.

So RICE for two days, then apply MVT for a faster recovery. MicroVas therapy also provides isotonic exercise for the muscles to help keep them in tone during recovery while waiting for the injury to heal enough for traditional physical therapy and exercise.

FOOTNOTES

1. Andrew J.M. Boulton, MD, FRCP
Public Health Burden of the Diabetic Foot: A Global Perspective
Paper presented: The Diabetic Foot Update
University of Texas Health Science Center
San Antonio, Texas
December 14, 2002

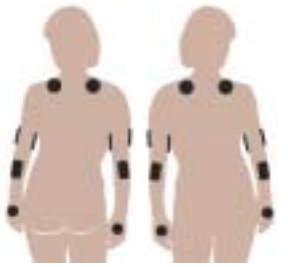
2. Mardon Day, D.P.M.
Assessing Risk Factors for Ulceration
Paper presented: The Diabetic Foot Update
University of Texas Health Science Center
San Antonio, Texas
December 14, 2002

3. Lawrence B. Harkless, D.P.M., et al,
Seven Keys to Treating Chronic Wounds
Podiatry Today

4. Gentzkow, G.D. and Miller, K.H. (1991),
Electrical stimulation for dermal wound healing.
Clin. Podiatr. Med. Surg. 8, 827-841
(emphasis added)

Operational Protocol

Pad Placement, Cleaning, Infection Control



Shoulder Pain
Bursitis
Bone Fractures (arms, hands)
Carpal Tunnel Syndrome

Place 4" round emitter pads on the anterior and posterior portion of each shoulder. Place 3"x5" emitter pads on the outside and inside of both upper arms. Place 3"x5" emitter pads on the anterior and posterior surface of both forearms, and 3" round emitter pads on the dorsum and palms of both hands.

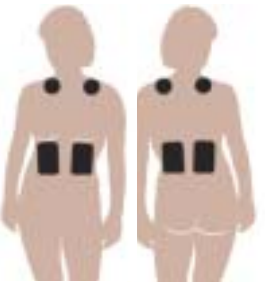
Lower Back Pain
Pressure Ulcers-Sacral Area
Incontinence

Place 5"X8" emitter pads anterior and posterior about 1" to 2" apart on both sides of the buttocks and abdomen, or large 8"X10" emitter pads directly over the lower back and over the lower abdomen. For treatment of extensive wounds in sacral area: remove existing dressing and cover wound with a sterile gauze pad soaked in sterile saline solution. Apply emitter pad directly over wound. Place second emitter pad on the lower abdomen of patient. At completion of treatment, redress wound with the product of your choice.

Diabetic & Non-Diabetic Neuropathy
Chronic Leg Pain
Diabetic Ulcers
Pressure Ulcers
Bone Fractures
Full Thickness Wounds (Various Etiology

Place 5"x8" emitter pads anterior and posterior on upper thighs. Place 4" round emitter pads on each side of both upper calves. Place 3"x5" emitter pads just above both ankles and 3" emitter pads on the top and bottom of each foot. (leave the wound covered with the dressing or your choice.)

Upper back Pain



Place either 4" round or 3"X5" emitter pads on the anterior and posterior of both shoulders. Place two 3"X5" or 5"X8" emitter pads just below both breasts and at corresponding points posterior.

For more extensive wounds: Remove the existing dressing and cover the wound with a sterile gauze pad soaked in sterile saline solution, apply the emitter pad directly over the gauze and the wound. Place the second emitter pad on the opposite side of the extremity using the blue conductor pad with the emitter pad. At the completion of the treatment, redress the wound with the product of your choice.

Sprains and Strains

Determine the appropriate size emitter pads based on the type and extent of injury. Place emitter pads directly over the affected area and also distal and proximal to the site. And other appropriate emitter pads on or near the affected area where needed.

General guidelines for use

Prior to beginning use of the MicroVas system, please review the operational protocols which are included. When selecting sites for emitter pad placement do not place emitter pads over the heart, neck or head. Use the largest emitter pads that can be physically placed adjacent to the area to be treated or directly over the treatment area. Use one or preferably two pairs of emitter pads surrounding the area such that each pair cause the current to flow through the area of treatment. Place an additional pair or two of emitter pads on the opposite sides of the large muscle masses of the limb proximal to the area of treatment. This will aid in blood flow in the larger vessels that supply the area to be treated and aid in the lymphatic drainage. Secure emitter pads with just enough pressure to ensure full contact between emitter pad and the skin but not too much to compromise blood flow.

MicroVas treatments are pre programmed at 45 minutes for each treatment. One treatment per day, five days per week will successfully treat most conditions. A patient with more severe conditions can be treated up to four times a day, two hours apart, for more serious conditions. This will be determined by the severity of the problem, response to treatment and clinical decisions by the physicians and clinicians.