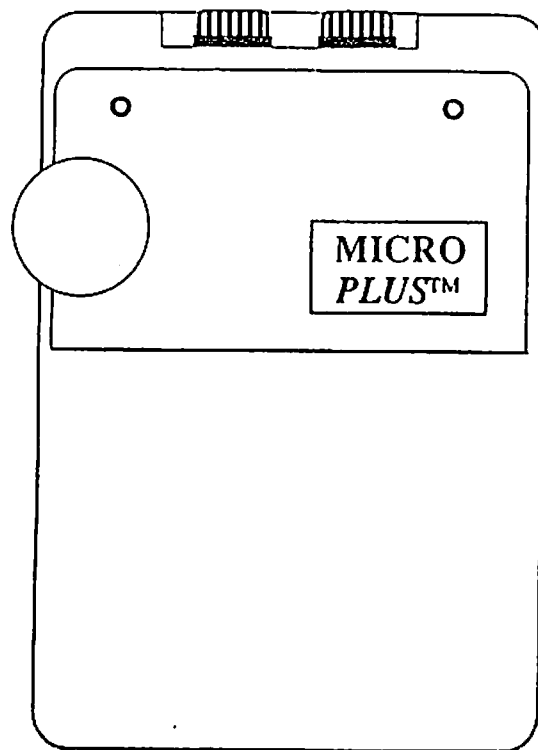


BioMedical Life Systems, Inc.  
**MICRO *Plus*™**  
Clinician Protocols and Techniques



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## Suggested Polarity Settings with the Use of Microcurrent

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**Background:** The human body is polarized positively along the central spinal axis and negatively peripherally. Advocates of Microcurrent use the positive pole proximally, often at the origin of the spinal nerve root, and the negative pole distally.

**Positive:** Is more effective in healing skin lesions and has a more anti-inflammatory physiological effect. The positive pole is used more often with acute injuries.

**Negative:** Is more effective with bone and nerve repair and regeneration. The negative pole has a vasodilative effect, which can be helpful with muscle spasm and contracted scar tissue. It is generally used with chronic neuromuscular symptoms.

**Positive/Negative:** Used when treatment requires combination of both + and - polarity or optimal therapy procedure is uncertain.

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## GENERAL INFORMATION

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The newest development in Electrical Therapy has been the introduction of microcurrent. Microcurrent uses a very low voltage current, usually between  $1\mu A$  and  $1000\mu A$ ; a microamp ( $\mu A$ ) is  $1/1000$  of a milliamp (mA).  $1000\mu A$  equals  $1mA$ . Most TENS devices have a milliamplitude range of  $1-80mA$ .

Where TENS (Transcutaneous Electrical Nerve Stimulation) is used for the relief of pain, Microcurrent, because of it's close resemblance and proximity to that of our own body's current, is thought to work at the cellular level.

It is theorized that healthy tissue is built as the result of direct flow of electrical current throughout our body. Electrical balance is disrupted when the body is injured at a particular site, causing the electrical current to change course. The use of microcurrent over the injured site is thought to realign this flow, and thereby aid in tissue repair.

It has been found that ATP (Adenosine Triphosphate) in the cell helps to promote protein synthesis and healing. The lack of ATP, due to trauma of the tissue, results in a decreased production of sodium and an increase in metabolic wastes, this combination is perceived as pain. The use of microcurrent at an injured area helps to realign the body's electrical current, increasing the production of ATP, thereby resulting in an increased rate of healing and recovery. This is in addition to blocking the pain that is perceived.

## GENERAL INFORMATION

The newest development in Electrical Therapy has been the introduction of microcurrent. Microcurrent uses a very low voltage current, usually between  $1\mu\text{A}$  and  $1000\mu\text{A}$ ; a microamp ( $\mu\text{A}$ ) is  $1/1000$  of a milliamp (mA),  $1000\mu\text{A}$  equals  $1\text{mA}$ . Most TENS devices have a milliamplitude range of  $1\text{--}80\text{mA}$ .

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## SAFETY

**CAUTION:** Federal law (USA) restricts this device to sale or use by or on the order of a Physician, so licensed by the State.

**INDICATIONS:** Transcutaneous Electrical Nerve Stimulation (TENS) devices are used for the symptomatic relief and management of chronic (long-term) intractable pain and as an adjunctive treatment in the management of post-surgical and post-traumatic acute pain problems.

**CONTRAINDICATIONS:** TENS devices can affect the operation of demand type cardiac pacemakers. TENS is not recommended for patients with known heart disease without prior physician evaluation of risk. Do not stimulate over the eyes or carotid sinus nerves. Do not apply TENS for: 1) undiagnosed pain syndromes until etiology is established 2) electrode placement that causes current to flow transcranially (through the head).

**WARNINGS:** This device should be used only under the continued supervision of a physician. TENS is ineffective for pain of central origin (i.e. appendicitis and hepatitis). TENS is of no curative value; it is a symptomatic treatment which suppresses pain sensation which would otherwise serve as a protective mechanism on the outcome of the clinical process. Safety of TENS devices for use during pregnancy or delivery has not been established. For external use only. Electronic equipment such as EKG monitors and EKG alarms may not operate properly when TENS is in use. The user must keep the device out of the reach of children.

**PRECAUTIONS:** Avoid adjusting controls while operating machinery or vehicles. Turn the stimulator off before applying or removing electrodes. Long-term stimulation at the same electrode site may cause skin irritation. Use only for the specific pain problem prescribed by physician. Effectiveness is dependent upon patient selection.

**ADVERSE REACTIONS:** Possible allergic reaction to tape or gel. Possible skin irritation or electrode burn under electrode.

## Suggested Polarity Settings with the Use of Microcurrent

**Background:** The human body is polarized positively along the central spinal axis and negatively peripherally. Advocates of Microcurrent use the positive pole proximally, often at the origin of the spinal nerve root, and the negative pole distally.

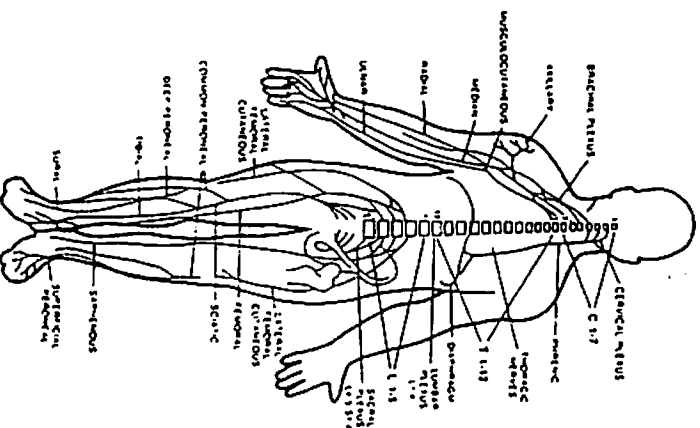
**Positive:** Is more effective in healing skin lesions and has a more anti-inflammatory physiological effect. The positive pole is used more often with acute injuries.

**Negative:** Is more effective with bone and nerve repair and regeneration. The negative pole has a vasodilative effect, which can be helpful with muscle spasm and contracted scar tissue. It is generally used with chronic neuromuscular symptoms.

**Positive/Negative:** Used when treatment requires combination of both + and - polarity or optimal therapy procedure is uncertain.

## DERMATOMES AND PERIPHERAL NERVOUS SYSTEM

### DERMATOMES



### The Muscle Motor Points

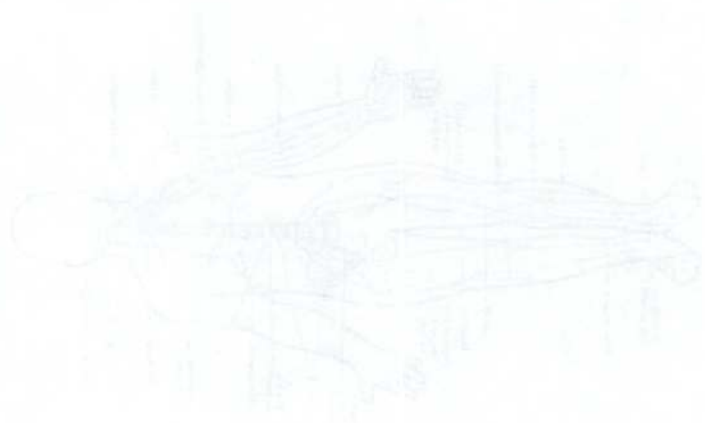
It has been established that muscle motor points frequently coincide with peripheral nerve regions, acupuncture points, meridians and dermatomes. Pain control will be far more effective using these motor points since the

# with the use of microfilm

and a variety of other factors. It is important to understand the importance of each of these factors and to be able to identify them in a microfilm. The following factors are the most important ones to be aware of when using microfilm:

- 1. The quality of the microfilm.
- 2. The quality of the microfilm reader.
- 3. The quality of the microfilm storage.
- 4. The quality of the microfilm handling.
- 5. The quality of the microfilm processing.
- 6. The quality of the microfilm distribution.
- 7. The quality of the microfilm retrieval.
- 8. The quality of the microfilm archiving.
- 9. The quality of the microfilm preservation.
- 10. The quality of the microfilm disposal.

# DISCUSSION

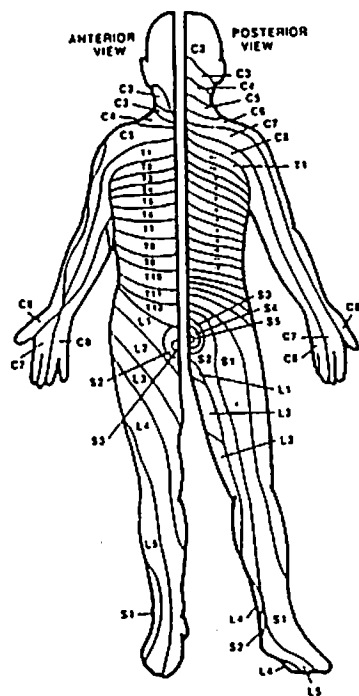


The diagram shows a person sitting at a desk, looking at a microfilm reader. The reader is connected to a computer system. The diagram is labeled with various parts of the system, including the reader, the computer, and the microfilm.



# DERMATOMES AND PERIPHERAL NERVOUS SYSTEM cont.

## PERIPHERAL NERVOUS SYSTEM



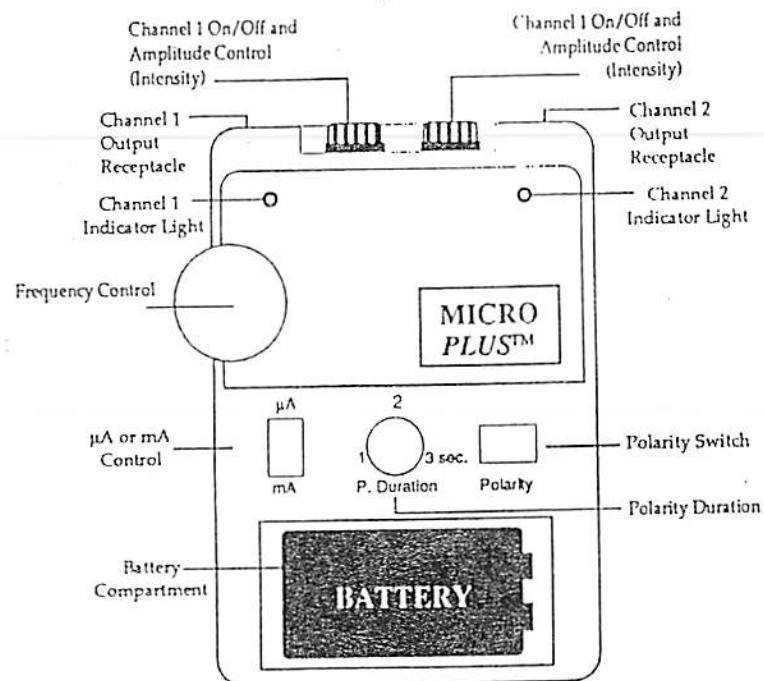
electrical stimulus will be conducted through a greater number of nerve fibers entering the spinal nerve segments. Using such points has been found to induce a greater flow of endorphins from the brain into the spinal column.

## SPECIFICATIONS

|                 |  |
|-----------------|--|
| Carrier Freq:   | 14,000 cycles  |
| Wave Form:      | Square   |
| Polarity:       | Positive,<br>Negative or<br>Bipolar with 1, 2 or 3<br>Second Adjustments                     |
| Output Current: | 0-1000 $\mu$ A Adjustable<br>0-5mA Adjustable<br>(Intensity Dial<br>Corresponds Numerically) |
| Output Voltage: | 2.5 Volts  |
| Pulse Rate:     | .5-120 Hz Adjustable   |
| Power Source:   | 9 Volt Battery   |
| Size:           | 3.9" x 2.75" x 1"  |
| Weight:         | 4.6 oz.  |
| Warranty:       | 5 years  |

# MICRO Plus™

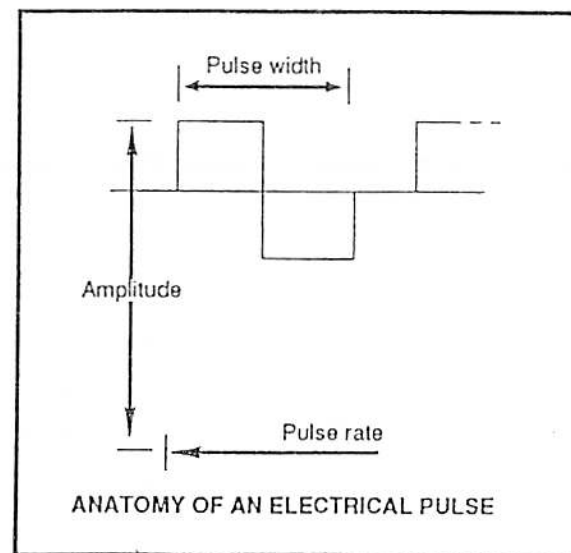
## Controls and Indicators



## GENERAL INFORMATION REGARDING THE UNIT

### BioMedical Life Systems, Inc.'s Micro Plus™

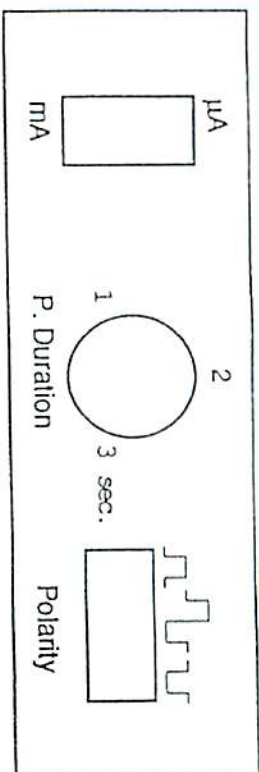
The MICRO Plus™ Unit has a square wave form that has a carrier frequency of 14,000 cycles per second. There are three polarity adjustments of the wave: positive, negative, and bipolar with 1, 2 or 3 second adjustments in each range. The hertz (pps) is adjustable from .5 up to 120. The therapist is able to stimulate in microamps 0-1000 $\mu A$  or in milliamps 0-5mA. The intensity dials correspond numerically to the  $\mu A$  or mA output. (See chart on page 10.) The unit operates on a 9 volt battery.



ANATOMY OF AN ELECTRICAL PULSE

SQUARE WAVE

## MODE SELECTORS



MODE SELECTORS WITHIN BATTERY COMPARTMENT

### OUTPUT CURRENT SWITCH

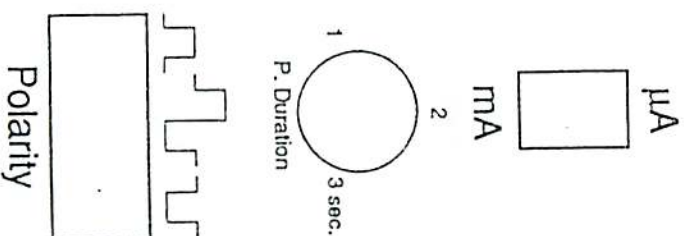
When the switch is set at the  $\mu A$  position, 0-1000  $\mu A$  current is available. In the mA position 0-5mA is available. The intensity dials correspond numerically to the desired output. Turn to the following page for output chart.

### POLARITY DURATION KNOB

The duration of the polarity change is adjustable from 1-3 seconds.

**POLARITY SWITCH**  
When switch is on MICRO Plus™ will be stimulating in the positive polarity. The position allows for negative polarity stimulation. For alternate positive then negative stimulation move switch to the position.

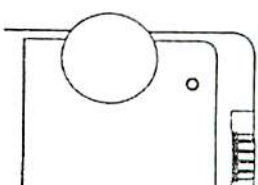
9



## MODE SELECTORS, cont.

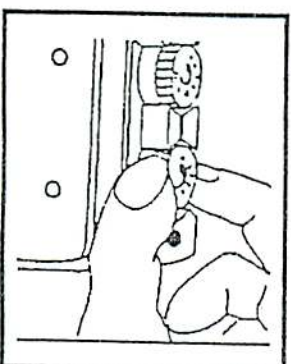
### FREQUENCY DIAL

The frequency dial found on the front of the MICRO Plus™ allows for adjustment of the frequency from .5 to 120 Hertz (from low to high frequency).



## AMPLITUDE OUTPUT CHART

| Knob Setting | $\mu A$<br>Microamps | mA<br>Milliamps |
|--------------|----------------------|-----------------|
| 1            | 25                   | 1               |
| 2            | 100                  | 2               |
| 3            | 250                  | 3               |
| 4            | 500                  | 4               |
| 5            | 1000                 | 5               |



Adjusting Amplitude

10

## BILLING CODES

|                   |   |
|-------------------|---|
| *Procedure Code - | E1399YP (Misc. durable medical equipment)<br>Micro Unit |
| * 64550 -         | TENS  |
| *97118 -          | Electrical Stimulation                                  |
| *97200 -          | Physical medicine, combined modalities,<br>1/2 hour     |
| *97201 -          | Additional 15 min. added to 97200                       |
| *97014 -          | Electrical Stimulation                                  |

## WOUND HEALING PROTOCOLS

These are only suggested guidelines. Since this device is a prescription item, electrode placement and machine settings should be determined by and under the supervision of a trained medical professional.

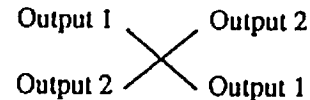
**RESULTS OF TREATMENT:** Increased rate of healing and pain relief.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** 1

**TREATMENT PERIOD:** Three or more weeks

**PAD PLACEMENT:** Bracket the wound with four pads (if possible) in a criss-cross fashion.



| TREATMENT | CURRENT SWITCH | POLARITY SWITCH | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|-----------------|-------|--------|------------------|
| 1.        | $\mu$ A        | Positive        | 0.5   | 15 min | 4                |
| 2.        | $\mu$ A        | Positive        | 80    | 15 min | 4                |

\* Treatment 1: Polarity duration 3 seconds

\* Treatment 2: Polarity duration 3 seconds

## GENERAL PROTOCOLS

### Ankle / Feet

Back

Elbow

Face

Hip

Knee

Neck

Shoulder

Thoracic

Wrist / Hand

These are suggested guidelines only. Since this device is a prescription item, electrode placement and machine settings should be determined by and under the supervision of a trained medical professional.

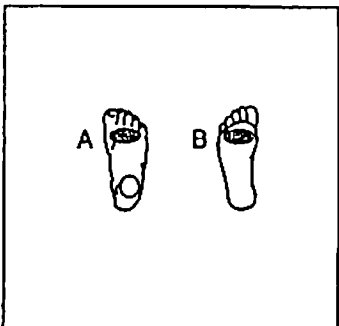
## ANKLE / FEET PLANTAR FASCITIS



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE           | PLACEMENT   | A & B<br>LEAD<br>WIRE |
|---------------------|---|-----------------------|
| 2 Electrode<br>pads |  | Into<br>output<br>1   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|--------|---------------------|
| 1.        | $\mu A$           |  | 120   | 15 min | 3                   |
| 2.        | $\mu A$           |  | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## ANKLE / FEET

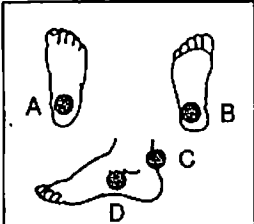
### HEEL SPUR



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into<br>output<br>1   | Into<br>output<br>2   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|--------|---------------------|
| 1.        | $\mu A$           |  | 120   | 15 min | 4                   |
| 2.        | $\mu A$           |  | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## ANKLE / FEET

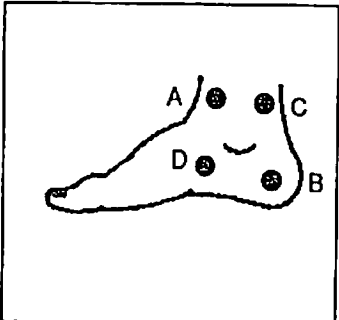
### ANKLE STRAIN/SPRAIN



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into<br>output<br>1   | Into<br>output<br>2   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|--------|---------------------|
| 1.        | $\mu A$           |  | 120   | 15 min | 4                   |
| 2.        | $\mu A$           |  | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

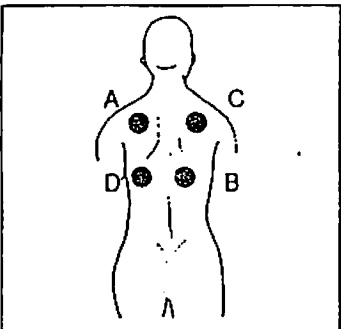
## BACK COSTOVERTEBRAL SYNDROME



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

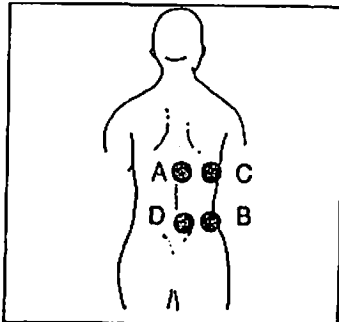
## BACK UNI-LATERAL LUMBAR SPASM



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

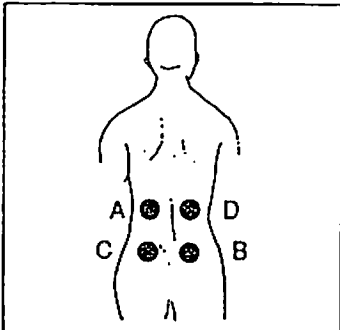
## BACK LUMBAR STRAINS



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

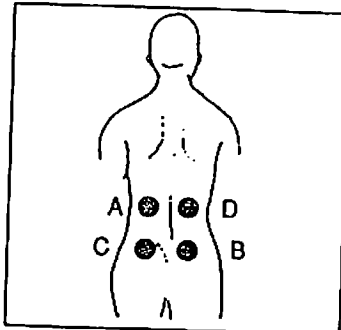
## BACK SCIATICA — POSITION 1



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## BACK SCIATICA — POSITION 2

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

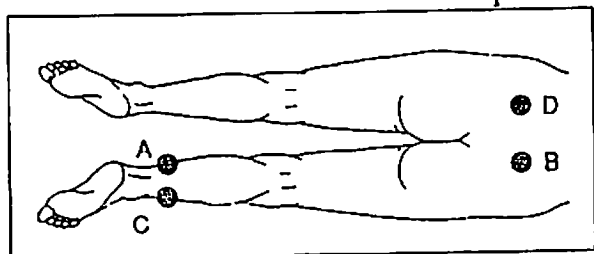
TREATMENT PERIOD: Until condition improves

| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads

Into  
output  
1

Into  
output  
2



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu$ A           |                    | 120   | 15 min | 4                   |
| 2.        | $\mu$ A           |                    | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## ELBOW OLECRANON BURSTITIS

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

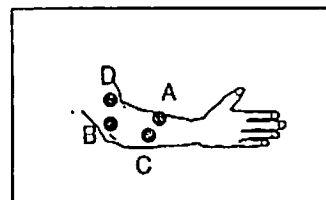
TREATMENT PERIOD: Until condition improves

| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads

Into  
output  
1

Into  
output  
2



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu$ A           |                    | 120   | 15 min | 3                   |
| 2.        | $\mu$ A           |                    | 0.5   | 10 min | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

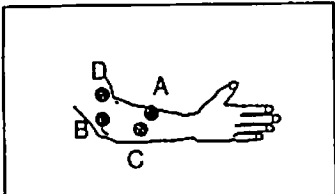
## ELBOW LATERAL EPICONDYLITIS



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

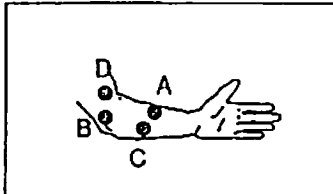
## ELBOW MEDIAL EPICONDYLITIS



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 10 min | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## ELBOW

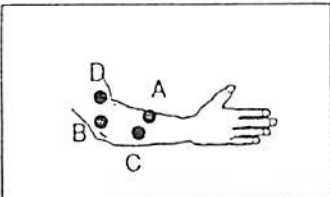
### ELBOW JOINT EFFUSION


RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu\text{A}$  |  | 0.5   | 20 min | 1                |

\* Treatment 1: Polarity duration 2 seconds

## FACE

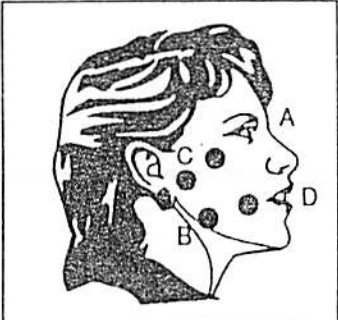
### TMJ DYSFUNCTION



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu\text{A}$  |  | 120   | 15 min | 2                |
| 2.        | $\mu\text{A}$  |  | 0.5   | 15 min | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## FACE


### TRIGEMINAL NEURALGIA



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE |
|------------------|---|-----------------------|
| 2 Electrode pads |  | Into output 1         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 1                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## HIP

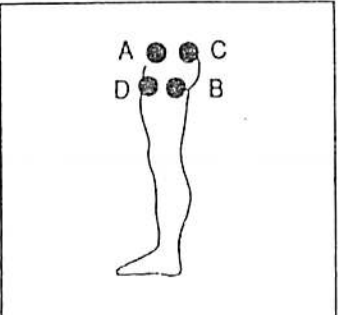
### TROCHANTERIC BURSITIS



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## HIP

### ISCHIAL BURSTITIS

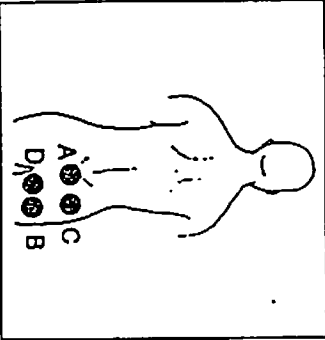
RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE           | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|-----------|-----------------------|-----------------------|
| 4 Electrode<br>pads |           | Into<br>output<br>1   | Into<br>output<br>2   |



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu A$           |                    | 120   | 15 min | 4                   |
| 2.        | $\mu A$           |                    | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds  
\* Treatment 2: Polarity duration 3 seconds

## HIP

### SI JOINT PAIN

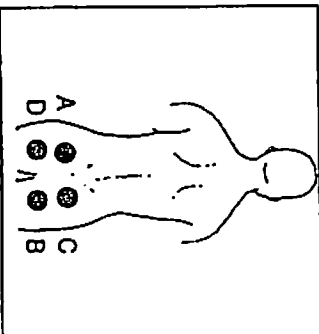
RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE           | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|-----------|-----------------------|-----------------------|
| 4 Electrode<br>pads |           | Into<br>output<br>1   | Into<br>output<br>2   |



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu A$           |                    | 0.5   | 15 min | 2                   |
| 2.        | $\mu A$           |                    | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds  
\* Treatment 2: Polarity duration 3 seconds

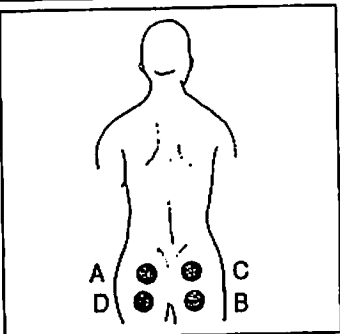
## HIP COCCYDYNA PAIN



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 0.5   | 15 min | 2                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

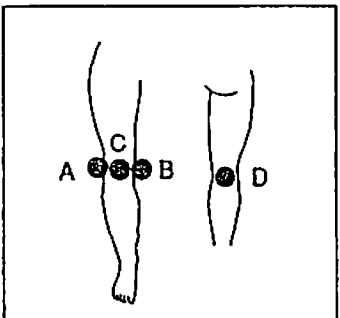
## KNEE TIBIAL TENDONITIS



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |  | 120   | 15 min | 4                |
| 2.        | $\mu A$        |  | 0.5   | 5 min  | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## KNEE

### PREPATELLA BURSTITIS

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

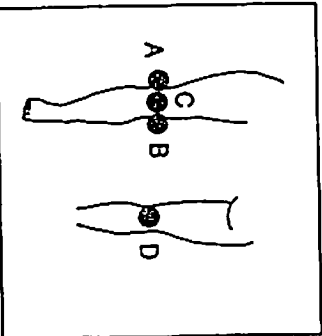
TREATMENT PERIOD: Until condition improves

| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads

Into output  
1

Into output  
2



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|------|---------------------|
|-----------|-------------------|--------------------|-------|------|---------------------|

1.  $\mu A$  120 15 min 4

2.  $\mu A$  0.5 5 min 1

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## KNEE

### PARTIAL MENISCUS TEAR

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

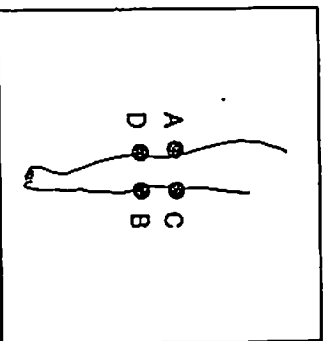
TREATMENT PERIOD: Until condition improves

| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads

Into output  
1

Into output  
2



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|------|---------------------|
|-----------|-------------------|--------------------|-------|------|---------------------|

1.  $\mu A$  120 15 min 4

2.  $\mu A$  0.5 15 min 1

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## KNEE

### CHONDROMALACIA PATELLA

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

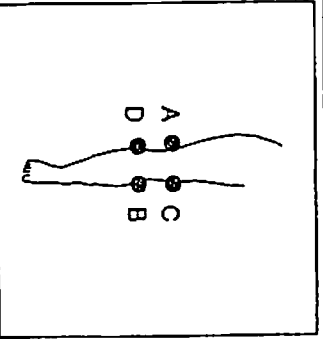
NUMBER OF TYPES OF TREATMENTS: 2 \*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu A$           |                    | 120   | 15 min | 4                   |
| 2.        | $\mu A$           |                    | 0.5   | 15 min | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## KNEE

### JOINT EFFUSIONS

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

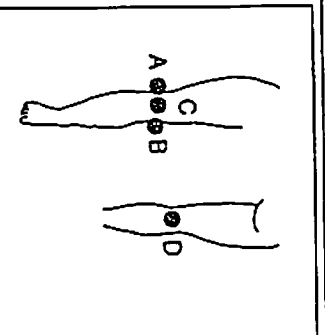
NUMBER OF TYPES OF TREATMENTS: 1 \*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu A$           |                    | 0.5   | 30 min | 1                   |

\* Treatment 1: Polarity duration 3 seconds

## NECK

### CERVICAL STRAINS / SPRAINS

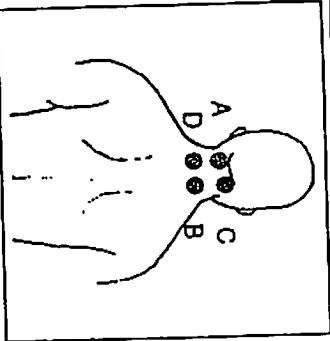
RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE           | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|-----------|-----------------------|-----------------------|
| 4 Electrode<br>pads |           | Into<br>output<br>1   | Into<br>output<br>2   |



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu A$           |                    | 120   | 15 min | 4                   |
| 2.        | $\mu A$           |                    | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## NECK

### CERVICAL RADICULOPATHY

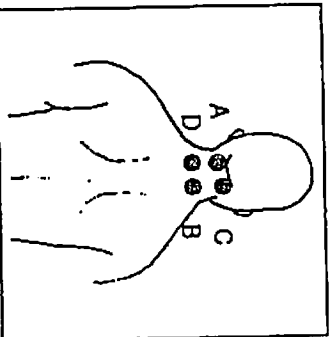
RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE           | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|-----------|-----------------------|-----------------------|
| 4 Electrode<br>pads |           | Into<br>output<br>1   | Into<br>output<br>2   |



| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|--------|---------------------|
| 1.        | $\mu A$           |                    | 120   | 15 min | 4                   |
| 2.        | $\mu A$           |                    | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## NECK

### BRACHIAL PLEXUS INJURY

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

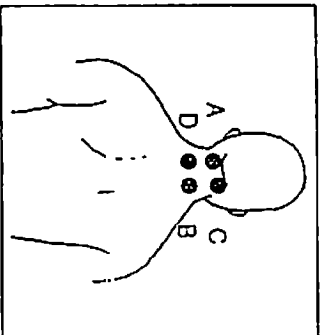
NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves



| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads



Into output 1  
Into output 2

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|------|---------------------|
|-----------|-------------------|--------------------|-------|------|---------------------|

1.  $\mu A$   120 15 min 4
2.  $\mu A$   0.5 5 min 1

\* Treatment 1: Polarity duration 2 seconds  
\* Treatment 2: Polarity duration 3 seconds

## NECK

### BRACHIAL PLEXUS INJURY

RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves



| ELECTRODE | PLACEMENT | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|-----------|-----------|-----------------------|-----------------------|
|-----------|-----------|-----------------------|-----------------------|

4 Electrode  
pads



Into output 1  
Into output 2

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH | FREQ. | TIME | AMP CONTROL<br>KNOB |
|-----------|-------------------|--------------------|-------|------|---------------------|
|-----------|-------------------|--------------------|-------|------|---------------------|

1.  $\mu A$   120 15 min 3
2.  $\mu A$   120 5 min 1

\* Treatment 1: Polarity duration 2 seconds  
\* Treatment 2: Polarity duration 3 seconds

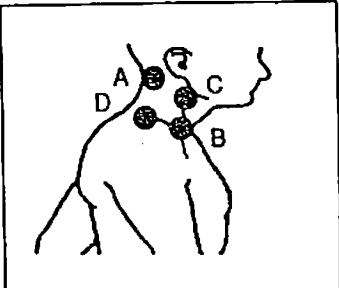
## NECK ACUTE TORTICOLLIS



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE           | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|---|-----------------------|-----------------------|
| 4 Electrode<br>pads |  | Into<br>output<br>1   | Into<br>output<br>2   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME  | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|-------|---------------------|
| 1.        | $\mu A$           |  | 0.5   | 5 min | 2                   |
| 2.        | $\mu A$           |  | 0.5   | 5 min | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

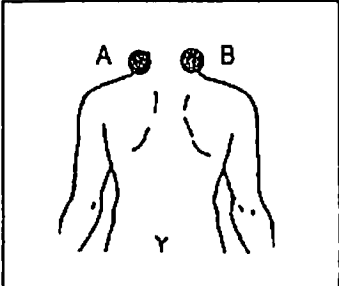
## NECK OCCIPITAL NEURALGIA



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE           | PLACEMENT   | A & B<br>LEAD<br>WIRE |
|---------------------|---|-----------------------|
| 2 Electrode<br>pads |  | Into<br>output<br>1   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME  | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|-------|---------------------|
| 1.        | $\mu A$           |  | 0.5   | 5 min | 2                   |
| 2.        | $\mu A$           |  | 0.5   | 5 min | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## SHOULDER

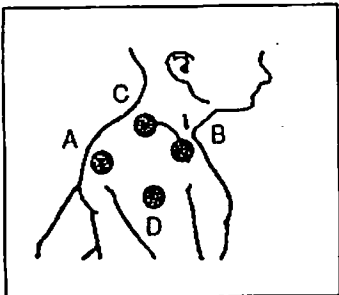
### GENERAL SHOULDER CONDITIONS



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE           | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|---|-----------------------|-----------------------|
| 4 Electrode<br>pads |  | Into<br>output<br>1   | Into<br>output<br>2   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|--------|---------------------|
| 1.        | $\mu\text{A}$     |  | 120   | 15 min | 4                   |
| 2.        | $\mu\text{A}$     |  | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

## THORACIC

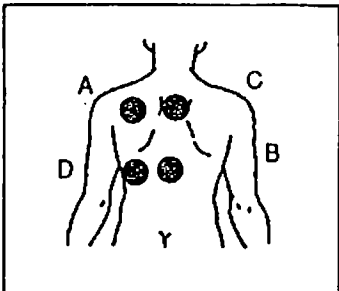
### HERPES ZOSTER



RESULTS OF TREATMENT: Accelerated tissue healing, increased blood flow and reduction of pain.

NUMBER OF TYPES OF TREATMENTS: 2\*

TREATMENTS PER DAY: As needed

TREATMENT PERIOD: Until condition improves

| ELECTRODE           | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|---------------------|---|-----------------------|-----------------------|
| 4 Electrode<br>pads |  | Into<br>output<br>1   | Into<br>output<br>2   |

| TREATMENT | CURRENT<br>SWITCH | POLARITY<br>SWITCH  | FREQ. | TIME   | AMP CONTROL<br>KNOB |
|-----------|-------------------|---|-------|--------|---------------------|
| 1.        | $\mu\text{A}$     |  | 250   | 15 min | 2                   |
| 2.        | $\mu\text{A}$     |  | 0.5   | 5 min  | 1                   |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

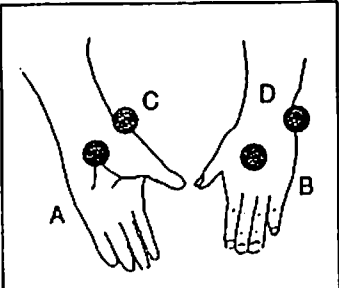
## WRIST/HAND CARPAL TUNNEL SYNDROME



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |   | 120   | 5 min  | 4                |
| 2.        | $\mu A$        |  | 0.5   | 15 min | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

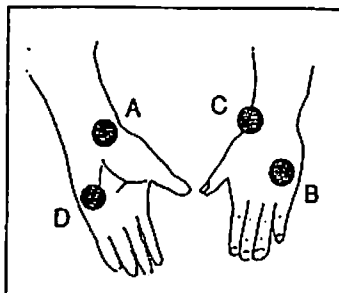
## WRIST/HAND GENERAL WRIST PAIN



**RESULTS OF TREATMENT:** Accelerated tissue healing, increased blood flow and reduction of pain.

**NUMBER OF TYPES OF TREATMENTS:** 2\*

**TREATMENTS PER DAY:** As needed

**TREATMENT PERIOD:** Until condition improves

| ELECTRODE        | PLACEMENT   | A & B<br>LEAD<br>WIRE | C & D<br>LEAD<br>WIRE |
|------------------|---|-----------------------|-----------------------|
| 4 Electrode pads |  | Into output 1         | Into output 2         |

| TREATMENT | CURRENT SWITCH | POLARITY SWITCH   | FREQ. | TIME   | AMP CONTROL KNOB |
|-----------|----------------|---|-------|--------|------------------|
| 1.        | $\mu A$        |   | 120   | 5 min  | 4                |
| 2.        | $\mu A$        |  | 0.5   | 15 min | 1                |

\* Treatment 1: Polarity duration 2 seconds

\* Treatment 2: Polarity duration 3 seconds

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## MICROCURRENT

### POLARITY ADJUSTMENTS

POSITIVE - To sedate a point - acute injuries

- Decrease inflammation
- Sedate Nerve irritation (Analgesic effect)
- Icing effect as in cold treatments
- Skin lesions
- Anti-inflammatory physiological effect
- Acute injuries
- Reduce edema

NEGATIVE - To stimulate a point - neuromuscular symptoms

- Heating effect
- Softens tissues (Trigger points, scars, fibrotic tissue)
- Stimulates/increases circulation (Helps muscle spasm & contracted scar tissue)
- Chronic neuromuscular symptoms
- Bone & nerve repair & regeneration

BIPOLAR SETTING - Treatments require combination of both or optimal therapy uncertain

- Pain
- Muscle spasm
- Injuries
- Edema
- Wound Care

\*For 24 hour treatment - recommend setting = positive or bipolar

## MICROCURRENT PHYSIOLOGY

- Hypothesis by Dr. Robert Becker states: A DC electrical system present in the human body is responsible for maintenance of tissue health. When the body is injured, this electrical balance is disturbed, and a shift occurs in the normal current flow. This is known as "current of injury"
- Microamperecurrent, 1000 times lower than millicurrent TENS; works at the cellular site, affecting ATP generation, protein synthesis and in general, the healing process.
- When the body sustains an injury:
  - Electrical current is disturbed
  - The muscle contracts as a protective response
  - This contraction/injury squeezes out the ATP (ATP is reduced)
  - The sodium pump is affected
  - Metabolic wastes are increasedResult: The patient perceives all these events as pain.

- According to study by Cheng, et. al:
  - DC currents ranging 10 $\mu$ A - 1000 $\mu$ A increase ATP concentrations in tissue between 300% and 500%.
  - DC currents above this range show decreases in ATP levels.
- Administration of microcurrent:
  - Aligns the body's electrical current
  - Increases ATP/protein synthesis
  - Aligns the sodium pump
  - Reduces metabolic wastesResults: A) Endorphin release  
B) Increased blood flow to injury site.  
C) Increased oxygenation to injury site  
D) Accelerated tissue healing  
E) Decreased pain