FOREWORD

The updated version of the Clinical User’s Manual represents more than eighteen years of scientific research and clinical application. It is important to note that this is a work in progress and in order to manipulate photon particles to speak to the cells (healing), we must increase our comprehension of the language of the cells (clinical response). This has always been the challenge and progress is accelerating as our understanding increases.

Many physiological effects of the interaction between light and cells are known, many are not. Among the latter are the effects on the components of cerebro-spinal fluid and both the vascular and lymphatic structures and contents. Significant research with regard to this is in progress and early indications are positive.

Over the past eighteen years, we have published many protocol updates, the majority of which are included in this manual. It is important to review and compare some of the earlier commentary with current advances in methodologies in order to fully comprehend this process of evolution. One must always be conscious of genetic, environmental and the many unknown factors that play a significant role in the effectiveness of the therapy and therefore the clinical results that can be achieved. Low Intensity Laser Therapy has advanced substantially in the last decade or two but “the best is still to come”.

We recommend a careful review of the guidelines in this compilation and encourage individual interpretation as indicated, while always being aware of the axiom, “Do the patient no harm”. In situations where other therapies have failed, there is nothing to be lost by the “intelligent” application of Laser Therapy and much may be gained. We see this phenomenon on a daily basis, particularly with neuropathies of undetermined origin, multiple sclerosis and many other conditions.

Personally, I feel that the utilization of Laser Therapy represents “A New Dimension in Medicine” and increasingly, researchers and clinicians are beginning to understand this reality.
We anticipate that in the next two to three years, this manual will be revised again to include new protocols that have been developed, tested and approved as progress continues.

Finally, I take this opportunity to acknowledge those who have made significant contributions in compiling this material – Richard Bramer, Michael Patterson, MSc, Leslie Perrin, BA, MSc, and Fernanda Saraga BSc, MSc, PhD.

Fred Kahn, MD, FRCS(C)
Mission Statement

Meditech International Inc. initiated research in the development of Laser Therapy Systems in 1989. The goal of the company has been to engineer devices that are superior to those in existence and scientifically develop accurate, effective protocols to treat a variety of medical conditions. These include sports and soft tissue injuries, musculo-skeletal problems and the arthritides. To date, we have surpassed our initial goals and expectations but each day advances our horizons as the educational process continues. Our primary objectives are to significantly improve/cure the multiple pathologies that we encounter in the shortest possible period of time. Guidelines to that end consist of the elimination of pain and the use of pharmaceuticals, in addition to the restoration of mobility and quality of life.
# Table of Contents

**Introduction** ............................................ 2
- Preamble ................................................. 3
- Frequency of Treatment ............................... 4
- Discharge of Patient from Treatment Program 4
- Length of Individual Treatments ................. 5
- Application of Treatment Arrays ................. 6
- Pulse Modulation ...................................... 9
- Use of Arrays in Combination ....................... 10
- The Concept of Clinical Laser Practice .......... 11
- The 10 Commandments of Patient Care .......... 13
- Helpful Hints ......................................... 15

**Parameters** ........................................... 17
- Frequency (Hz) ....................................... 18
- Duty Cycle (%) (Width of the pulse) ............. 19
- Power Density (mW) ................................. 20
- Energy Density (J/cm²) .............................. 20
- Duration (sec) ....................................... 20
- Waveform ............................................. 21

**Prescriptions** ........................................ 23
- Cervical Spine ....................................... 24
- Thoracic Spine ...................................... 26
- Lumbosacral ........................................... 28
- Shoulder Joint ....................................... 32
- Elbow Joint .......................................... 34
- Wrist .................................................. 36
- Hand/Digits ......................................... 38
- Hip Joint ............................................. 40
Table of Contents (cont.)

Thigh and Leg Muscle Injuries .....................42
Knee Joint ................................................44
Lower Extremity ........................................48
Ankle and Foot ........................................50

Index of Conditions Treated .......................52
Comments from the Author .......................53
Protocol Updates ......................................55
Introduction

Preamble .................................................................. 3
Frequency of Treatment ........................................4
Discharge of Patient from Treatment Program ......4
Length of Individual Treatments ......................... 5
Application of Treatment Arrays ........................... 6
Pulse Modulation .................................................... 10
Use of Arrays in Combination ................................. 10
The Concept of Clinical Laser Practice .................... 12
The Ten Commandments of Patient Care ............. 13
The Treatment of Dermatological Pathologies ...... 15
Helpful Hints ......................................................... 17
Introduction

Meditech values both its clients and the customer service we are able to provide. At this time we are pleased to bring you a major update from many of the original protocols developed over the past eighteen years. Significant progress has been achieved over time and this trend will continue. It is the focus of our technological and clinical approach. This publication is based on 18 years of scientific research and extensive clinical experience (over 1 million patients treated to date), with the continuing refinement of the protocols being the major objective. We also support the development of protocols by independent therapists, utilizing over 1,000 BioFlex Systems in over 42 countries world-wide. The BioFlex System is not only an advanced therapeutic delivery system but can also be used to perform basic scientific and clinical research on an individual basis.

BioFlex Laser Therapy Systems are designed to be used by trained health care professionals as part of a comprehensive treatment plan. In most programmes it is considered to be the basic therapeutic platform.

The protocols provided are highly effective in over 75% of cases, indicating that there is always room for improvement. The tremendous flexibility of the BioFlex Systems allows health care professionals to safely explore the use of multiple frequencies, different waveforms and energy densities with any of the treatment arrays and probes available. Indeed, it is an open system with therapeutic innovation as the norm. At our corporate clinic, we compile safe new protocols on a daily basis and monitor each individual patient response. Most importantly, the manipulation of these protocols will further enhance clinical effectiveness in the majority of the remaining 25% of cases (customization).

If you require additional protocols or wish to share innovative new protocols you may have discovered, please contact us at 416-251-1055 or info@bioflexlaser.com.
Preamble

1. On occasion, pain may increase after the first or second treatment. If that is the case, patients having been forewarned, are advised to utilize ice and analgesics p.r.n. On subsequent visits, frequencies and duty cycles of all treatment arrays are appropriately reduced. For example, if the original infrared setting is 20 Hz and 40% duty cycle, these should be reduced to a frequency of 5-10 Hz and a duty cycle of 20%. On subsequent visits, they can be gradually elevated as tissue adaptation and tolerance increases.

   The same rule should be observed initially in the treatment of autoimmune cases, older patients and children. In all these situations, it may be observed that as tissue tolerance develops, both frequencies and duty cycles can be increased using clinical reassessment as the appropriate guide.

2. One should also alert patients that if the treatment array should become too warm during treatment they should advise the attendant. If an elderly patient leans back against the array placed on the spine for instance, there may be a lack of ventilation and over-heating can occur. It is important to avoid using treatment heads between patients until the heads have cooled to an adequate degree. These are common-sense matters but must always be observed. The therapeutic array is designed to be athermal and in order for heat to be dissipated away from the tissues, the array must be properly ventilated.

3. If initial protocols are improving the condition being treated, continue to utilize these until symptoms plateau and only then move to the next stage, i.e. stage 2, stage 3, etc. Many patients (30-50%) achieve total recovery on the initial protocol utilized.
Frequency of Treatment

1. In acute conditions, it may be appropriate to treat patients on a daily basis for 4 days or even longer. Evaluate each treatment response until symptoms subside. This approach is particularly applicable in cases of trauma, herniated discs and acute back problems.

2. Once the symptoms have diminished, treat three times per week until stable, then reduce to twice per week until improvement is at least 80% or more.

3. Weekly maintenance therapy may be required with degenerative osteoarthritis for two to three months or even longer in certain instances.

4. Longer treatment sessions in many situations results in a reduced number of treatments for each condition.

5. Completion of treatment in acute conditions generally requires one to three weeks. In chronic situations such as degenerative osteoarthritis, one to two months may be necessary. In degenerative osteoarthritis of the lumbosacral spine with stenosis of the spinal canal and/or the foramina, up to 50 treatments may be indicated over a protracted period of time.

Discharge of a Patient from Treatment Program

Discharge is appropriate when the following criteria are met; i.e. the patient is:

- Relatively asymptomatic
- Fully functional
- No medications are required
- Quality of life and activity levels have returned to normal

Generally from 1 to 30 or more treatments are required depending on the extent and severity of the pathology.
Length of Individual Treatments

Initially, we confined our treatment sessions to less than 40 minutes. Currently our standard treatment for most conditions is between 20 and 40 minutes, however, for back problems and pathological conditions of greater scope and depth, up to one hour or even more may be utilized. In situations with multiple conditions, an hour may be devoted to the spine and 30 minutes to an extremity. If time is a factor, treatments can be reduced to 15-20 minutes in simple localized etiologies (i.e. epicondylitis). Always treat the most severe problem most aggressively, including duration of treatment. Protocols provided should be effective for the majority of patients; however, some broad guidelines in treating the following categories of pathology prevail.

Protocols – Frequency, Duty Cycle, Energy Density, Duration, etc.

Degenerative
Chronic
Traumatic
Neurogenic
Inflammatory
Autoimmune

High

Energy Density Levels

Low
Application of Treatment Arrays

Although there is generally a focal point (acupoint) of pathology characterized by pain and other symptoms, inevitably the area of involvement is much wider and deeper than generally surmised. Therefore, we always recommend that a wider tissue area be irradiated around the major focal point (three dimensional perspective).

1. Local: Apply probe to the primary area of pathology.

2. Nerve Root of relevant dermatome as it exits the spinal cord.

3. Peripheral Pain: When treating areas of peripheral pain it is generally preferable to treat over the spinal cord and the nerve roots innervating the area where symptoms exist, as they exit the spinal canal, in addition to the area where the pain sensation is localized. If the initial treatment of the localized area is successful this may not be necessary. Therapeutic effectiveness is frequently enhanced when the nerve root origin is also treated. This is particularly valid with radiculitis where sciatic nerve pain is the subjective symptom but the appropriate application is over the nerve roots as they exit the spinal canal. Frequently, in treating localized lesions (i.e. carpal tunnel syndrome), it may be appropriate and extremely helpful to treat the cervical nerve roots in conjunction with local therapy particularly in problematic cases.

4. Sandwich Approach: (i.e. when treating the foot or wrist irradiate dorsal and plantar/palmar aspect during the same session). In areas such as the wrist, ankle, knee and foot, applications of the therapeutic array should generally surround the entire joint. With the bones of the foot, particularly the talo-navicular, cuneiform and metatarsal regions, the “sandwich approach” is usually most effective with a portion of the therapy being applied dorsally, and similarly on the plantar aspect.
1. **Trigger or Accupoint:** Apply probe as directed over area where most severe pain is located.

2. **Good Contact** between treatment arrays and tissue should always be maintained. This may require the gentle application of pressure keeping in mind that ventilation for proper cooling must continue. When strapping arrays into place, be sensitive with regard to the tissues at all times. Good contact without excessive pressure is important. Bindings should be snug but not too tight as this may occlude venous flow and lead to thrombosis.

3. **Tissues:** When treating any area, particularly a joint, attempt to irradiate all the tissues involved. For example, the shoulder should be irradiated from the superior, anterior, posterior and lateral aspects with all arrays. The axillary approach is optional.

4. **Maintaining Cleanliness:** Always wash hands between treating patients. Utilize saran wrap and/or plastic casings when treating inguinal/axillary areas where elevated bacterial counts exist. It is also advisable to clean and dry the skin before the application of the arrays. Additionally, arrays and probes should be carefully cleansed with suitable antiseptic between use on patients.

5. **Infrared 200 mW Laser Probe (LD-I 200):** As evidence of Meditech’s ongoing effort to improve the effectiveness of its therapy units, we now have an LD-I 200 available. Over the past few years, Meditech in its clinical laboratory has carried out extensive testing, utilizing the LD-I 200. Whereas the 75mW infrared Laser Probe (LD-I 75) is satisfactory in most instances, the LD-I 200 should be introduced in situations where the clinical status has reached a plateau or more power is desirable. Instances where this is most applicable are cases with advanced osteoarthritis, particularly with stenosis of the spinal canal and the foramina. Other conditions include degenerative osteoarthritis of the hips, knees, etc. and disc herniations. The LD-I 200 can, of course, be run at any power level.
1. desired and time utilized can be reduced by 25-40% compared to the LD-I 75 for Stage One in particular. Good clinical judgment should always prevail.

The advantages of the 200 mW Laser Probe are as follows:
1) It can reduce the conventional treatment time by 20-30%
2) It will be more effective in the therapy of more deeply located and chronic medical conditions.

10. Contraindications: The BioFlex System should not be used during the first trimester of pregnancy or over any known malignant lesion. The latter is currently under investigation.

11. Problem Cases: In situations where progress has plateaued or has not progressed as rapidly as anticipated, the following sequential strategies may apply:

• Switch to sine wave.
• Change IR array to continuous wave and after five to six treatment sessions, unless there is good progress, switch back to modulated wave.
• In other situations where progress is not satisfactory, use red light at 1,000 Hz frequency and 90% duty cycle, infrared at 250 Hz and 90% duty cycle and the probe continuous wave or at 100 Hz and 90% D.C. This protocol has been particularly effective in chronic cases.
• One can vary the above strategies as clinical response dictates.
• Creativity and persistence are the key ingredients of any effective program.

12. Red 100 mW Laser Probe (LD-R 100):
• Power can be set from 1 mW to 100 mW.
• The LD-R 100 can be used in stand-alone configuration or in combination with any other arrays and probes.
• In some dermal conditions, wound healing, epicondylitis, rotator cuff injuries, temporomandibular joint dys function, etc., it can supplant or be used in combination with the infrared probes.
• The time utilized depends on the extent of the lesion and the clinical response with previous applications.
• It can be used as an add-on prior to the infrared probe application or in place of same.
• Time factor of application should be less than 10 minutes in all instances.
• Without considering economic implications, we feel the LD-R 100 adds another significant dimension in effective Laser Therapy.
• Meditech is continuing research regarding power settings, etc. with all arrays and probes.
• This probe is designed for the clinician who is creative and observant with regard to clinical response in the application of LILT.
• After three years of clinical testing, we have found that the LD-R 100 can be a most useful adjunct in cases that have plateaued or when a more productive approach should be considered.

Summary of Applications for the LD-R 100
For use in superficial pathologies (see below)
• In stand-alone configuration
• In combination with other arrays and probes
• For use in acupuncture, etc.

Conditions where application is useful (LD-R 100)
1. Wound healing
2. Dermatological conditions
3. Temporomandibular Joint Dysfunction
4. Frontal and maxillary sinus inflammation
5. Rotator Cuff injuries
6. Epicondylitis
7. Small joints of the hands
8. Trigeminal Neuralgia
9. Bell’s Palsy
10. Herpes Zoster
As we continue our clinical evaluation and develop new protocols, these will be forwarded to all therapists once the data has proven to be effective.

**Pulse Modulation**

All the treatment arrays can be pulsed from one hertz (Hz) to half a million hertz per second. Generally, we have confined our applications up to the 10,000 Hz level; we have however, initiated some studies to explore higher frequencies (up to 25,000 Hz).

When the duty cycle is raised to 100% the pulse becomes continuous [i.e. continuous wave (CW)].

In our experience we usually operate the red arrays in continuous mode, at least initially, and pulse the infrared array. This may change with patient response or if a plateau is reached. Again, changes are based on clinical experience and judgement. For example, the patient may respond well at a frequency of 20 Hz and a duty cycle of 40%, but if the latter is increased to 60% and this results in pain, it should be reduced. Always remember that all treatment arrays and laser probes can be operated in pulsed or continuous mode.

**Use of Arrays in Combination**

Our standard procedure at this time is to use the large surface red array (LS-R 750) in continuous mode, followed by the large surface infrared array (LS-I 1500) pulsed and the infrared probe and/or red probe again in continuous mode. This appears to be satisfactory in most instances. On occasion, if treatment time is a factor, one can simply use the large surface infrared array with or without the probes and for superficial lesions, the large surface red array with or without the probes. Again, these decisions are based on clinical experience and judgement (i.e. the human factor).

To summarize, in conditions such as dermal or superficial lesions, one array (large surface red array) may be utilized effectively.
but with pathologies penetrating to the deeper levels, the large surface infrared array may also be required.

The permutations and combinations are infinite and the system was designed with these aspects in mind (i.e. unrestricted flexibility).

No matter how sophisticated the computer software program may be, a great deal of clinical judgement must always be exercised. For example, in the case of autoimmune disease and elderly patients, low frequencies and low duty cycles are generally applicable initially. As the treatment progresses, larger doses may be required and are tolerated quite easily once tissues adapt. Our standard treatment for most conditions is between 25 and 45 minutes, however, for back problems and pathological conditions of greater scope and depth, up to one hour or more may be required.

As in all medical practice, there are no absolutes and what we have provided are broad and reliable guidelines. Some knowledge pertaining to anatomy, physiology, physics and clinical medicine is important in maximizing the effectiveness of the BioFlex LILT System. At all times one must be aware that individual tissue response varies and this factor cannot always be anticipated.

This manual presents reliable basic treatment protocols that should be successful in the majority of the patient population, relieving symptoms in over 75% of patients treated. Customization will be required for the remainder, leading to overall improvement rates in excess of 90% and potentially 100%.

With the BioFlex System, an experienced therapist can rapidly learn to individualize (i.e. customize) protocols for each patient. Alternatively, the manual can be utilized for its basic directives.
The Concept of a Clinical Laser Practice

- Laser Therapy is not designed to manage pain but to **cure** the cause that results in the perception of pain.

- One should **never** operate for pain; prior to performing surgical procedures, particularly if a definitive diagnosis is not available, it is preferable to institute a course of laser therapy. Surgery can always be carried out at a later date, if necessary.

- Once a diagnosis has been established and the protocols and expected outcomes have been explained to the patient, the therapy should begin.

- No patient can improve unless therapy is initiated!

- Investigative procedures can be ordered at leisure and this should not preclude initiating treatment on the basis of a working diagnosis.

- When treatment plateaus are reached, as is sometimes the case, positive encouragement should be given. Adjusting protocols is generally appropriate at this point in order for healing to continue.

- Each day’s aspect of the therapy should be explained to the patient in detail as required and the latter should be encouraged to continue treatment until positive results are obtained.

- Several conditions can be treated on the same visit simultaneously, if a sufficient number of therapeutic devices are available.

- Explain the need for continuing therapy or the consideration of a periodic maintenance program as indicated.

- Preferably, patients should be treated by the same therapist on each visit; building relationships engenders trust and contributes to the patient’s comfort level.

- In the administration of laser therapy one should always present a positive ambience, a standard that should be
prevalent in all medical practice.

- Laser therapy may not conform to some of the regulatory criteria i.e. HMO’s, governments, codes, etc. - but from a clinical perspective, neither do patients.

- These are just some of the important factors that we have found to be helpful in order to obtain positive clinical outcomes. Moreover, this approach constitutes a smoothly functioning, seamless therapeutic environment.

In the literature and frequently in conversation one hears discussions regarding the “placebo effect” or the “anecdotal” aspect of therapy. Skeptics will always be skeptics. Despite them, it has been proven conclusively that Low Intensity Laser Therapy is the most exciting technology in the rehabilitation industry today. The healing power of the therapy is based on the interaction between light and cells. Low Intensity Laser Therapy offers a technology that is widely applicable and has unlimited healing power; it will enable clinicians to safely treat a wide variety of cellular pathologies without significant risk.

**The Ten Commandments of Patient Care**

Today, society demonstrates a high degree of disregard for the individual. This is particularly regrettable in dealing with patients who are ill and as a result may demonstrate unacceptable behavior patterns. Whereas this is not their right, it is excusable on the basis of their pain and other symptoms and should therefore be addressed or disregarded. Aside from this, there are certain principles that should be observed in patient management.

1. A human voice should answer the telephone at all times during clinic hours. Patients should not be kept waiting unduly on the telephone or at reception.

2. The response of the receptionist should be friendly and courteous. *Never react negatively* to a patient no matter
what the provocation may be. If you do so, you cease to be of any value to the healing process.

3. The temperature of the facility should be comfortable, the atmosphere bright and clean, magazines should be up to date and refreshments should be available.

4. Any reasonable request on the part of the patient should be carefully considered and engender a positive response. Attempt to satisfy patient requests, even if they do not conform to the expected standard.

5. Eliminate the use of the words “no” and “sorry” as much as possible from your vocabulary. Even try “yes” once in a while; it works wonders.

6. Discussions should focus on the patient’s problem, the therapeutic process and what may be expected. Carefully enumerate the ideal number of treatments, their frequency and anticipated result, at the same time explaining that there are variations between individuals.

7. Perform assessments in a friendly and relaxed fashion. Make certain that the patient is comfortable at all times.

8. Advise the patient of the diagnosis, treatment plan and potential outcome in a realistic, positive manner. Whereas one should focus on the positive aspects of the situation do not avoid discussing potential negative factors. This approach also generates trust and confidence.

9. Background classical music is comforting and relaxing to most patients, not to mention staff. Sessions should consist of a soothing experience which will diminish the patient’s apprehension and stress and is conducive to achieving the primary objective (i.e. to resolve the patient’s problems).

10. Always attempt to make the therapeutic experience seamless, including scheduling future visits to accommodate the patient.
This novel approach, once the standard in medical practice, should impart a positive attitude to all participants involved. As a consequence, patients will be more compliant and staff members will experience a greater sense of personal gratification. It is easier to smile, be friendly and positive. This approach can play a significant role in the healing process.
Helpful Hints!

1) The 200 mW laser probe may be substituted in most situations at Stage II or Stage III instead of the 75 mW infrared probe.

2) All arrays may be run in pulsed or continuous mode.

3) Heat packs may be applied as indicated following LILT.

4) In acute injuries, application of ice prior to laser therapy may be useful during the initial 2-4 days of treatment. This will cause vasoconstriction and facilitate photon penetration and absorption.

5) Massage therapy is an effective adjunct in the treatment of musculoskeletal pathologies. It produces the following effects:
   - improved circulation
   - mobilization of muscles
   - breakdown of adhesions
   - relief of muscle spasm and tension
   The overall effect of massage therapy is highly beneficial in many respects. In addition to being a “feel-good mechanism” and relaxing to the individual, it speeds up the laser therapy process, which remains the basic platform of our treatment programmes.

6) Length of treatment is always subject to individual variation.

7) No protocol is absolute and the system is totally flexible, allowing an infinite number of permutations and combinations with regard to treatment parameters. This process is referred to as customization and is of significant importance.

8) Stretching and strengthening exercise may be indicated once acute symptoms have diminished.

9) Swimming is the preferred form of exercise.

10) Weight lifting is to be avoided until tissue healing is complete.

11) Creativity and good clinical judgment are the keynotes at all times.
Parameters

Frequency (Hz) .............................................................. 18
Duty Cycle (%) (Width of the pulse) ............ 19
Power Density (mW) ......................................................... 20
Energy Density (J/cm²) .................................................. 20
Duration (sec) ............................................................... 20
Waveform ................................................................. 21
Parameters

Frequency (Hz)

When the system is used in “Modulation” (Mode of Operation), frequency describes how many times (cycles) per second the waveform repeats. For example, the figure below shows a square wave repeating 2 times in one second.

Therefore, the frequency of the above waveform is 2 cycles per second (c/s) or 2 Hertz (Hz).
**Duty Cycle (%) (Width of the pulse)**

When the system is used in “Modulation” (Mode of Operation), duty cycle describes the percentage of time the waveform is functioning.

The figure below shows a square waveform with a duty cycle of 50% because it is on for half of its full cycle ($1/2 \times 100\% = 50\%$).

![Graph of a square waveform with a duty cycle of 50%](image)

The figure below shows a square waveform with a duty cycle of 25% because it is on for $1/4$ of its full cycle ($1/4 \times 100\% = 25\%$).

![Graph of a square waveform with a duty cycle of 25%](image)
**Power Density (mW/cm²)**

Measured in milliWatts per square centimeter (mW/cm²), power density describes the amount of light delivered over the treatment area. For example, if a 60 Watt (equals 60,000 mW) light delivers all its light to a 10 cm² area, the power density is:

\[
60,000 \div 10 = 6,000 \text{ mW/cm}^2
\]

**Energy Density (J/cm²)**

Indicates the amount of power divided by the area (see power density), multiplied by time (or duration). This is measured in Joules per square centimeter (J/cm²). For example, if a 60 Watt (W) light delivers all its light to a 10 cm² area for 10 seconds, the power density is:

\[
60 \div 10 \times 10 = 60 \text{ J/cm}^2
\]

**Duration (sec)**

The length of time for the treatment.
Waveform

When the system is used in “Modulation” (Mode of Operation), there are three waveforms that can be selected: square, sine, and triangle. The waveform controls the output intensity of the laser diode or super luminous diode (SLD). For example, a square wave controls the intensity by either turning on and off the laser or SLD, without intermediate states. A sine or triangle wave controls the intensity by turning on and off the laser or SLD slowly.

Pictorially, the waveforms are shown below:

- **Square Wave**
  - Laser diode or SLD fully on
  - Laser diode or SLD fully off

- **Sine Wave**
  - Laser diode or SLD fully on
  - Laser diode or SLD fully off

- **Triangle Wave**
  - Laser diode or SLD fully on
  - Laser diode or SLD fully off
Prescriptions

Cervical Spine ....................................................... 26
Thoracic Spine ..................................................... 28
Lumbosacral ........................................................... 30
Shoulder Joint ....................................................... 34
Rotator Cuff Injury .............................................. 36
Elbow Joint ............................................................ 38
Epicondylitis ........................................................ 40
Wrist ................................................................. 42
Hand/Digits .......................................................... 44
Hip Joint .............................................................. 46
Adductor Muscle Injuries (Muscle Origin Tear) ........... 48
Thigh and Leg Muscle Injuries ................................. 50
Knee Joint ............................................................. 52
Lower Extremity ..................................................... 56
Ankle and Foot ..................................................... 58
Achilles Tendonitis .............................................. 60
Plantar Fasciitis .................................................... 62
Headaches ............................................................ 64
Facial Pain ............................................................ 66
Temporomandibular Joint Dysfunction ..................... 68
Herpes Zoster ........................................................ 70
Wound Healing ..................................................... 72
Rheumatoid Arthritis ............................................. 74
Lymphoedema ....................................................... 75
Fibromyalgia ........................................................ 76
Dermatological Applications .................................. 77
Eczema/Dermatitis ............................................... 78
Psoriasis ............................................................. 79
Gout ................................................................. 80
Generic I  Degenerative Osteoarthritis ..................... 81
Generic II  Tendinosis .......................................... 82
Generic III  Inflammatory Conditions ...................... 83
Generic IV  Autoimmune Conditions ...................... 84
Cervical Spine

- Cervical Radiculopathy
- Facet Joint Syndrome
- Disc Herniation with or without Radiculopathy
- Myofascitis
- Soft Tissue Injuries
- Degenerative Osteoarthritis
- Stenosis (Spinal, Foraminal)

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>10-50</td>
<td>CW</td>
<td>5/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>20-70</td>
<td></td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td></td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90</td>
<td>5/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50</td>
<td>50-90</td>
<td>5/5/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-1,000</td>
<td>90</td>
<td>5/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50-250</td>
<td>80-90</td>
<td>5/5/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:

1. Treat from occiput to T2 vertically and transversely from C4-T3.
2. Place probe to areas of pathology (acupoints); generally over the midline and para-cervical tissues from C1-T3 as clinically indicated.
3. May also treat vertically and follow with two lateral positions.
4. For Stage One, the LD-I 200 probe is set at 40% power output. For Stage Two and Three, the power output may be increased up to 100%.
Cervical Spine

A

Vertical

B

C
Thoracic Spine
- Kyphosis
- Compression Fractures
- Myofascitis
- Degenerative Osteoarthritis
- Ankylosing Spondylitis

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>50-80 CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90 CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50</td>
<td>90 CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td></td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-5,000</td>
<td>80-90 CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250-1,000</td>
<td>80-90 CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90 CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:
1. Depending on the extent of pathology, treat 30-60 minutes.
2. In myofascitis may start (Stage One) with DUO+ Red continuous wave and DUO+ Infrared at 50 Hz frequency and 60% duty cycle.
3. If required may treat up to one hour.
4. For Stage One, the LD-I 200 probe is set at 40% power output. For Stage Two and Three, the power output may be increased up to 100%.
Thoracic Spine

Figure B may be used in serial positions 1, 2 & 3 depending on the extent of the pathology.
Lumbosacral

- Degenerative Osteoarthritis with or without Spinal/Foraminal Stenosis
- Disc Herniation with or without Radiculopathy
- Facet Joint Syndrome
- Sacroiliac Joint Dysfunction
- Spondylo-arthropathies
- Rotoscoliosis
- Lateral Scoliosis

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>5/7/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>50-90 CW</td>
<td></td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>5/7/5/5 8-10</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90</td>
<td>5/7/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250</td>
<td>90 CW</td>
<td>5/7/5/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW</td>
<td>CW</td>
<td>8-10</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-5000</td>
<td>80-90 CW</td>
<td>5/7/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>500-1000</td>
<td>80-90 CW</td>
<td>5/7/5/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW</td>
<td>CW</td>
<td>8-10</td>
</tr>
</tbody>
</table>

- See page 32-33 for Treatment Tips and additional Large Surface Array Placements.
Lumbosacral

Positions

6 - 8 min.

8 - 10 min.
Lumbosacral (Continued)

Treatment Tips:
1. Depending on the extent of pathology, treat 30-60 minutes or more.
2. Use as many placements as necessary to treat the existing condition effectively.
3. Duration of treatment must be adequate with all therapeutic placements.
4. Depicted on page 31 and 33, are the placement positions of the standard back treatment applications in the majority of cases we encounter.
5. These require placement of the large surface arrays at positions A, B, C and D.
6. Additionally, a vertical placement is recommended over the lumbar spine using the infrared array only, for 6-8 minutes as indicated in position E.
7. For a consistent beneficial effect, treatment is required for 5-8 minutes at position A, 8-10 minutes at position B and 5-8 minutes for the oblique applications C and D using both red and infrared large surface arrays.
8. One may treat for a longer period on the side on which the nerve root compression is most pronounced but usually we treat bilaterally.
9. Application of the probe is generally focused on the most severely affected area. Usually, this involves L3-S1 however may extend to higher levels, requiring placement of the arrays in those areas in addition.
10. The probes are usually applied for 6-10 minutes over the focus of the pathology involved (infrared and/or red) and may be extended over the sciatic nerve to a point distal to the piriformis muscle as clinically indicated.
11. For Stage One, the LD-I 200 probe is set at 50% power output. For Stage Two and Three, the power output may be increased up to 100%.
Lumbosacral

C  5 - 8 min.

D  5 - 8 min.

E  6 - 8 min.
Shoulder Joint

- Acromioclavicular Joint Dysfunction (Trauma, Separation, Arthritis)
- Impingement Syndrome
- Repetitive Stress Injury
- Adhesive Capsulitis (Frozen Shoulder)
- Tear of Glenoid Labrum
- Humeral Fractures
- Ligamentous Injuries
- Tendonitis / Bursitis
- Tendinosis (Degenerative Condition)

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>10-20</td>
<td>CW</td>
<td>5/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>50-60</td>
<td>6/6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90</td>
<td>5/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>30-50</td>
<td>50-90</td>
<td>6/6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>200-1000</td>
<td>90</td>
<td>5/5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250</td>
<td>80-90</td>
<td>6/6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>70-90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:
1. Generally add LD-R 100 (Red Laser Probe) 5 or more minutes over the deltoid muscle the anterior aspect of the joint capsule and as indicated to the posterior aspect of the joint capsule.
2. The addition of the red LD-R 100 to the LD-I 200 may be highly beneficial.
3. For Stage One, the LD-I 200 probe is set at 40% power output. For Stage Two and Three, the power output may be increased up to 100%.
Shoulder Joint

Usually apply DUO Array as in Figures A, B & C. Follow with Infrared Probe over focal points (ports accessible to joint). i.e., anterior & posterior joint capsule, subacromial area, acromioclavicular joint and deltoid muscle.

Axillary placement may also be useful.
Elbow Joint
- Biceps / Triceps Tendonitis
- Olecranon Bursitis
- Degenerative Osteoarthritis
- Ulnar Nerve Pathologies

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>10-50</td>
<td>CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>40-80</td>
<td>CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td></td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>20-70</td>
<td>CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>30-90</td>
<td>CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td></td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-1000</td>
<td>70-90</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50-250</td>
<td>80-90</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>100 or CW</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:
1. The LD-I 100 red probe may be utilized 5 minutes over acute area in conjunction with or instead of the LD-I 200 infrared probe.
2. For Stage One, the LD-I 200 probe is set at 40% power output. For Stage Two and Three, the power output may be increased up to 100%.
Apply DUO Array as in Figure A; if radiation of symptoms is to the arm, or as in Figure B if radiation of the symptoms is to the forearm. Otherwise, utilize a position that is central over the joint.

Treat around the entire circumference of the joint based on clinical findings and may require two overlapping placements if radiation of pain is both proximal and distal (see Epicondylitis protocol).
Wrist

- Carpal Tunnel Syndrome
- Ulnar Nerve Compression
- Fractures
- Degenerative Osteoarthritis

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>10-20</td>
<td>CW</td>
<td>8</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>40-70</td>
<td>10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>8</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>50-90</td>
<td>10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-1000</td>
<td>90</td>
<td>8</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250</td>
<td>70-90</td>
<td>10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:

1. Apply probe from area proximal to flexor retinaculum to mid palm following the course of the median nerve.
2. Circumferential or sandwich approach may be applicable in some cases.
3. Treatment may be extended up to one hour per session.
4. Always consider additional treatment of the cervical spine if clinically indicated.
5. For Stage One, the LD-I 200 probe is set at 40% power output. For Stage Two and Three, the power output may be increased up to 100%.
Can use DUO+ Array as in Figure A, over dorsal and palmar aspect. Figure B may be preferable in some instances. Generally treat primarily over palmar surface.

May also use portion of treatment time (30-40%) as in illustration B. On occasion may apply over dorsal aspect transversely or longitudinally.
Hand/Digits
- Dupuytren's Contracture - De Quervain's Disease
- Soft Tissue Injuries - Metacarpal Fractures
- Degenerative Osteoarthritis

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>50-70</td>
<td>6/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50</td>
<td>90</td>
<td>6/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-5000</td>
<td>70-90</td>
<td>6/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250-1000</td>
<td>70-90</td>
<td>7/5</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:
1. When treating digits always use laser probe around entire circumference of joints.
2. Apply for longer duration over surface most involved (generally dorsal).
3. Circumferential or “sandwich approach” may be applicable.
4. Red laser probe may be used in conjunction with infrared probe.
5. For Stage One, the LD-I 200 probe is set at 40% power output. For Stage Two and Three, the power output may be increased up to 100%.
A & B: DUO+
C: Application of probe to MP and IP joints.
Hip Joint

- Degenerative Osteoarthritis
- Tear of Labrum (post fracture, trauma, etc.)
- Capsulitis / Synovitis
- Legge Perthes Disease

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>8/8/8</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>70-90</td>
<td>CW</td>
<td>10/10/10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>8/8/8</td>
<td>10/10/10</td>
<td>10-12</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90</td>
<td>8/8/8</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250</td>
<td>90</td>
<td>10/10/10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>10-12</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-5000</td>
<td>90</td>
<td>8/8/8</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>1000</td>
<td>80-90</td>
<td>10/10/10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>10-15</td>
</tr>
</tbody>
</table>

Treatment Tips:

1. One should utilize three laser treatments per week, one hour of massage weekly and daily non-weight bearing/stretching exercises as tolerated. Initially one may treat daily for four to five consecutive days.

2. The LD-I 200 Laser Probe is applied for ten minutes (approx. three minutes each) over the anterior, lateral and posterior ports of the hip joint.

3. Aquatherapy & massage/stretching here as in all conditions, accelerates the healing process.

4. In many cases, hip and back problems coexist and may require treatment simultaneously.

5. For Stage One, the LD-I 200 probe is set at 70% power output or even higher. For Stage Two and Three, the power output may be increased up to 100%.
A: Anterior / B: Lateral / C: Posterior

Three points of approach to the hip joint.

As in all instances, use DUO⁺ Array and complete with Infrared Probe application.
Thigh and Leg Muscle Injuries

- Hamstrings: Biceps Femoris, Semitendinosus, Semimembranosus
- Quadriceps: Rectus Femoris, Vastus Medialis, Vastus Intermedius, Vastus Lateralis,
- Psoas Major, Iliacus and Sartorius

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO⁺ Red</td>
<td>50</td>
<td>CW</td>
<td>8</td>
</tr>
<tr>
<td>DUO⁺ Infrared</td>
<td></td>
<td>60-90 CW</td>
<td>10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO⁺ Red</td>
<td>250</td>
<td>90</td>
<td>8</td>
</tr>
<tr>
<td>DUO⁺ Infrared</td>
<td>50</td>
<td>80-90 CW</td>
<td>10</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO⁺ Red</td>
<td>1000</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>DUO⁺ Infrared</td>
<td>250</td>
<td>80-90 CW</td>
<td>15</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:
1. N.B. Thrombophlebitis must always be ruled out.
2. Depending on the extent of pathology, one hour of treatment may be required.
3. Laser applicable but patient should be on anti-coagulants if possibility of embolic phenomena exists.
4. For Stage One, the LD-I 200 probe is set at 50% power output. For Stage Two and Three, the power output may be increased up to 100%.
Thigh and Leg Muscles

A: Hamstrings; Position 1, 2, 3 and 4

B: Quadriceps mechanism injuries; similar placements may be utilized.
## Knee Joint

- Ligamentous Injuries
- Meniscal Tears
- Supra / Infrapatellar Tendonitis
- Tendinosis (Jumper’s Knee)
- Degenerative Osteoarthritis
- Chondromalacia Patella
- Osgood-Schlatter Disease

### Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO⁺ Red</td>
<td>50</td>
<td>CW</td>
<td>6/6/6</td>
</tr>
<tr>
<td>DUO⁺ Infrared</td>
<td></td>
<td>50-90 CW</td>
<td>6/6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

### Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO⁺ Red</td>
<td>100-200</td>
<td>90</td>
<td>6/6/6</td>
</tr>
<tr>
<td>DUO⁺ Infrared</td>
<td>250</td>
<td>80-90 CW</td>
<td>7/7/7</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

### Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO⁺ Red</td>
<td>1000-5000</td>
<td>80-90</td>
<td>7/7/7</td>
</tr>
<tr>
<td>DUO⁺ Infrared</td>
<td>250-1000</td>
<td>90</td>
<td>8/8/8</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

- See page 54-55 for Treatment Tips and additional Large Surface Array Placements.
A: Circumferential application superior: 3 placements with medial and lateral application overlapping at patellar surface. (See next page for additional placements)

**Preferred Treatment:**
DUO⁺ Array is placed over medial / lateral compartments and popliteal space. (circumferentially)

Emphasis of treatment using laser probe should focus on compartments most severely affected i.e. medial, lateral and patellar compartments. Popliteal area may also be involved, particularly in posterior horn tears, Baker's Cyst, tendonitis, etc.
Knee Joint (continued)

Treatment Tips:

1. Generally forty minutes is sufficient, however one hour may be required with large knees and more extensive pathology. Treat four quadrants, or two anterior (medial and lateral) and one over the popliteal space as clinical assessment dictates, particularly in post knee replacements with extensive induration.

2. Treat around the entire circumference of the knee. 50-60% of the duration of the treatment is directed at the compartments most severely afflicted (usually the medial or patellar compartment). The remainder is apportioned to the lateral compartment and the popliteal space as indicated. Both large red and infrared arrays are utilized in addition to the laser probe. This provides better penetration into the knee joint and is therefore more effective.

3. Generally the knee is best treated in an extended position of 110 - 120°, (ie. 20 - 30° beyond the right angle as indicated in figures A & B). For penetration to the posterior aspect of the patella and the patellar compartment, flexion of the knee to 90° or more may be advisable. Treat circumferentially around the patella with the laser probes for retropatellar erosion etc.

4. The patellar compartment is best treated by medial and lateral application, overlapping at the patella. Currently we consider this to be best practice.

5. The preferential approach is circumferential in most situations.

6. Consider the Red Laser Probe (LD-I 100) if plateau is reached, over the appropriate compartment(s).

7. For Stage One, the LD-I 200 probe is set at 60% power output. For Stage Two and Three, the power output may be increased up to 100%.
B: Central posterior application (popliteal space)

C: Central anterior application - only utilized on occasion with Osgood-Schlatter's disease and/or infrapatellar ligament problems.
**Lower Extremity**

- Gastrocnemius (Medial and Lateral Heads)
- Soleus - Soft Tissue Injuries
- Anterior Tibial Compartment Syndrome - Myositis / Tendonitis
- Peroneal Tendons and/or Nerve Problems - Fractures

### Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>60-80 CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6</td>
</tr>
</tbody>
</table>

### Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100</td>
<td>90</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50</td>
<td>80-90 CW</td>
<td>7/7</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6</td>
</tr>
</tbody>
</table>

### Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-1000</td>
<td>90</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250</td>
<td>80-90 CW</td>
<td>7/7</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

### Treatment Tips:

1. May require up to one hour of treatment if area involved is extensive.
2. Treat 30-60 minutes over the entire area with DUO+ Red and DUO+ Infrared Treatment Arrays with Anterior Tibial Compartment Syndrome and other soft tissue inflammatory problems.
3. If no acupoints exist, the laser probe may not be required.
4. For Stage One, the LD-I 200 probe is set at 60% power output. For Stage Two and Three, the power output may be increased up to 100%.
Position 1, 2 & 3 may be utilized in anterior tibial compartment syndrome and other problems as indicated. Usually 1 & 2 are sufficient.
Ankle and Foot

- Degenerative Osteoarthritis
- Neuropathy of the Foot
- Tarsal Tunnel Syndrome
- Morton’s Neuroma
- Soft Tissue Injuries
- Stress Fracture
- Metatarsalgia
- Pes Planus
- Biomechanical Problems

Stage One:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>50</td>
<td>CW</td>
<td>6/6</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td></td>
<td>60-70 CW</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Two:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>100-250</td>
<td>90</td>
<td>6/6</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>50</td>
<td>90</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td></td>
<td>CW</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Stage Three:

<table>
<thead>
<tr>
<th>Treatment Head</th>
<th>Frequency</th>
<th>Duty Cycle</th>
<th>Duration (min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUO+ Red</td>
<td>250-5000</td>
<td>90</td>
<td>5/5</td>
</tr>
<tr>
<td>DUO+ Infrared</td>
<td>250-1000</td>
<td>80-90</td>
<td>6/6</td>
</tr>
<tr>
<td>LD-I 200</td>
<td>CW or 100</td>
<td>70-90</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Treatment Tips:

1. Surround the joint with DUO+ Array where appropriate and possible from the anatomical perspective.
2. With neuropathies may start at lower levels i.e. DUO+ Red at 10 Hz and 50% duty cycle and DUO+ Infrared at 20 Hz and 50% duty cycle. Increase according to clinical indications.
3. In many situations utilize third placement over calcaneus (heel) for more effective treatment.
4. Also consider using Red Laser Probe as clinically indicated.
5. For Stage One, the LD-I 200 probe is set at 50% power output. For Stage Two and Three, the power output may be increased up to 100%.
A is applicable for lateral and anterior approaches (i.e. ligamentous injuries, effusions, etc.). This is usually combined with B and C positions.

B is appropriate for medial and posterior problems.

C & D are useful for a variety of problems as additional approaches.

Always consider circumferential approach with third position over the heel as this is most effective.
Index of Conditions Treated

Ankle and Foot............................................................... 50
Cervical Spine............................................................ 22
Elbow Joint................................................................. 32
Hand/Digits............................................................... 38
Hip Joint................................................................. 40
Knee Joint................................................................. 46
Lower Extremity......................................................... 48
Lumbosacral............................................................. 26
Shoulder Joint.......................................................... 28
Thigh and Leg Muscle Pain......................................... 44
ThoracicSpine.......................................................... 24
Wrist........................................................................ 36
COMMENTS FROM THE AUTHOR

On a personal note, the development of these guidelines has been a labour that produces humility and gratification in equal measure. The intense effort required was at times exhausting but always rewarding. To see patients who are physically incapacitated return to a life of mobility and independence is satisfying beyond description. To experience the rapid recovery in athletes rendered immobile by injuries is an equally positive experience. Sometimes one is filled with wonder at the body’s natural ability to heal, assisted by rational non-traumatic therapies such as rest, massage, stretching, aqua therapy and of course Laser Therapy.

To those therapists who are new to the Meditech approach, never hesitate to try novel concepts. Each cell of every organism has a genetic makeup that is unique; therefore, individual tissue response can vary considerably. Therapists may utilize red arrays that are pulsed, infrared using continuous wave, frequencies that are higher or lower and wave forms and energy densities varying from those prescribed; the quest is unending. We are all inveterate explorers on the road to promote healing and I welcome your participation on this journey.

Yours sincerely

Fred Kahn MD, FRCS(C)
President and CEO
Meditech International Inc.
PROTOCOL UPDATES

Protocol Update 1: Waveforms
June 2006

In January of this year, we performed over 1,000 treatments using sinusoidal waveform. Our preliminary observations indicated that in many conditions, where a plateau had been reached, this approach appeared to stimulate improvement. Whereas results were encouraging, we have decided that for the time being and until further research evidence supports a change, we will continue to initiate treatment using the square waveform.

In brief, initiate treatment in all situations with the square waveform and the protocols according to the software and the clinical user’s manual and change to sinusoidal waveform only if no improvement occurs after 8-12 treatments. As long as progress continues utilizing the square waveform, remain on this course and only switch according to the above instructions.

While there have been no adverse results with the sinusoidal waveform, we plan to do a further series of studies to explore this approach more fully. At the same time, we recommend switching to the sinusoidal waveform for a period of time, if no improvement occurs with the square waveform after 10 or more treatments.

Once again, we remind you that at Meditech, we carefully research all aspects of protocol changes prior to institution on a large scale.
Protocol Update 2: Frequency and Duty Cycle
January 2007

In some challenging cases utilizing the infrared array in continuous wave has also been found to be helpful. Again, this demonstrates the advantage of the flexibility of the BioFlex System.

In generic situations, where low dosages are appropriate initially, one may utilize the red array at a frequency of 10 Hz and a duty cycle of 50%, infrared at a frequency of 10 Hz and a duty cycle of 40% and the probe at a frequency of 10 Hz and a duty cycle of 60%. One can then increase these protocols as the tissues adapt to the number of joules per centimeter square that are delivered.

Generic protocols for cases where higher dosages are more applicable, consists of red continuous, infrared at a frequency 50 Hz and duty cycle 50-80% and the laser probe using continuous wave.

We recently had a case of herpes zoster involving the trigeminal nerve and the nerve roots C2-6. This case responded after only two treatments with almost complete resolution of the pain and the dermal lesions. The low generic approach was utilized in this instance.

Above all, you must persist in your efforts, space the treatments appropriately and be aware that these situations may vary from one individual to another. The therapeutic capability exists and your creativity and clinical judgment will be the ultimate guidelines. At Meditech, we are always prepared to assist you in these endeavours.
Protocol Update 3: Tattoos

March 2007

In the utilization of laser probes over tattoos, a significant degree of pain may be elicited. This can be alleviated by placing ice over the tattoo prior to treatment.

The cause for the pain is the presence of ferric oxide, aluminum, manganese, cadmium and other metallic components in the dyes utilized in this industry. It is probable that the interaction of photon particles with these metals is responsible for this reaction. If the pain is severe, one may be required to decrease the intensity and duration of the treatment over these areas, particularly the use of the laser probes.

It should be noted that lasers have also been utilized to remove tattoos, although at Meditech we have had no particular experience with this application. The theory is that the absorption of light (photons) by the metal components present in the ink causes the latter to dissolve into tiny particles, which are then removed by the lymphatic system.

Protocol Update 4: Dermatological and Other Applications

April 2007

This section will deal primarily with dermatological applications and wound healing. In all instances, one should be aware that all diodes can be pulsed from one to 500,000 pulses per second.

Duty cycle can be utilized from one to one hundred percent.

Waveforms include square, sine, triangular and continuous.

Duration for treating any physical condition can be from 1-60 or more minutes.
One can see that the combinations and permutations that can be utilized are almost infinite, particularly in view of the eight arrays and three probes commercially available.

At Meditech, we perform considerable ongoing clinical research to determine which of the above parameters is most appropriate for any particular clinical condition.

In all cases, clinical correlation with the effect of irradiation is useful to determine the protocols utilized. This is particularly applicable in the treatment of dermal lesions, where individual variations seem to be significantly influenced by genetic and environmental factors. It should be apparent, therefore, that a wide range of parameters and protocol settings can be utilized – i.e. customization.

The preponderant dermatological conditions, in the following order, exist as follows: eczema, non-specific dermatitis, ulcers, psoriasis, acne, acne rosacea etc.

Frequently, with eczema particularly, multiple areas are involved and therefore different protocols can be utilized in each area. This will determine what is most effective for that individual, as the skin is readily visualized and changes are therefore easily monitored.

Depending on the extent of the lesion, usually shorter durations are appropriate than with chronic back problems for example. One might treat one area with red continuous, another area with infrared continuous, a third area with red pulsed and a fourth area with infrared pulsed. This is a good approach and may be complemented with the laser probes in areas where scarring or more severe change has been noted. One should carefully review the preamble stated above before proceeding with treatment. It is also incumbent on the therapist to keep accurate records and photographs to determine the change of status of the lesions.
With dermal lesions it is generally appropriate to utilize treatment times of shorter duration. If lesions are localized, one may use the red or infrared laser probe alone; however, if they are diffuse or generalized, the infrared or red large surface array may be preferable. As you can see, the choice is almost unlimited. If you obtain good results with this approach, you may continue with it; lengthen duration gradually and/or combine infrared with the red arrays/probes as clinically indicated.

The generalities noted can be incorporated with significant effectiveness throughout all applications but more specifically with dermal conditions.

**Protocol Update 5: The 200mW Infrared Probe**

*June 2007*

Many therapists continue to be concerned when patients plateau. In brief, the signs and symptoms are not demonstrating the degree of anticipated improvement.

This, of course, can occur in some of the more complex cases and we find that patience is always rewarded. Treatment should be continued at moderate or even lower levels with periodic forays into Stage Three territory. Changes in parameters and protocol derivatives can be applied using different strategies for a matter of two to five treatment sessions.

Useful strategies:

- Changing infrared to continuous wave.
- Applying all arrays in continuous wave mode.
- Switching to sine wave.
- Switching to high levels, i.e. red array 5000 - 10,000 Hz, 90% duty cycle, infrared 1000 Hz, 90% duty cycle.
These are just some of the strategies one can utilize in order to improve treatment outcomes. Again, this requires close correlation between clinical status and the protocols being implemented. Most important of all, however, is that patients derive as much benefit as possible out of any protocol and remain with the initial protocol as long as possible if it is effective.

**Protocol Update 6: Use Of Laser Therapy In Periocular Region**

*June 2007*

In the past, on two to three occasions, minimal ocular irritation has been reported by patients after using the laser probes around the eyes. This may be attributed to the incorrect use of the protective shields or failure to direct the laser beam away from the eye itself. The symptoms reported are feelings of minor irritation which last for less than an hour. In view of this, we recommend that the laser probes are not used within 2cm of the orbital area.

At the same time, if it is essential to utilize them, we recommend the following initiatives from the safety perspective:

- Always use protective shields with great care (maintain their position throughout the treatment).
- If probes are used in the periocular area, always direct the probe away from the eyeball (point upward, downward or laterally away from the eye).
- Do not use the infrared or red probe above 10 - 25 mW of power.

To date, no permanent ocular damage has been sustained and in order to maintain this standard, we recommend the institution of the above directives.
The most common condition that we treat in dermatology is eczema. It is therefore incumbent for the therapist to understand the various aspects of this pathological entity.

Eczema is also frequently referred to as atopic dermatitis or non-specific dermatitis. This condition has a genetic basis. Often no specific etiology is apparent and the lesions can be ascribed to the interaction of multiple genes and triggered by external environmental factors. The greater the numbers of atopic genes that are present, the less environmental initiators are required to activate the disease.

The cells at the centre of the inflammation are called T lymphocytes. Their presence represents the immune system’s reaction to the trigger factors. Increased T-cell activity occurs in response to various antigens. Excessive stimulation of T-cells is secondary to the activity of genetically altered atopic Langerhans cells (Langerhans cells are resident in the epidermis and are responsible for presenting antigens to lymphocytes).

Genetic defects in the epidermal barrier make the skin susceptible to breakdown, permitting entry of numerous irritants including organisms (bacteria, viruses, mites, etc.), detergents, sprays and other foreign materials. All of these permit increased penetration of antigens.

Acute flare-ups occur when the immune system in the dermis over-reacts to environmental or emotional triggers, resulting in clinical symptoms characterized as dermatitis or in lay terms, a “rash”.

Different individuals have unique etiologies or triggers that result in a
breakout of the rash. Some of the more common triggers include:

- Changes in temperature or humidity
- Chemical irritants (pesticides, alcohol, astringents, perfumes, soaps, detergents, etc.)
- Physical irritants such as clothing, particularly wool and rough fabrics
- Allergies (dust, pollen, mold, etc.)
- Stress (emotional and/or physical)

A significant aspect of therapy is to determine the trigger factors and delete them from the environment.

If this is not effective, LILT presents a new therapeutic approach. As we continue to treat more eczemas, psoriasis and other dermatological factors we are experiencing significant variations in response to laser therapy. As previously indicated, these are based on genetic, environmental, allergic and unknown factors and we stress the latter.

The ability to customize protocols is essential in treating these lesions. Whereas it is somewhat less important in treating musculoskeletal conditions, in the dermatological sector it is of paramount significance. For instance, when a patient presents with a generalized dermatological problem i.e. extensive lesions scattered over various body surfaces, we can initially treat four or more lesions utilizing different protocols for each area.

We might begin treating one area with red continuous for 5-10 minutes depending on the circumference of the lesion, another area with infrared pulsed from 10/50 to 50/50 for a similar length of time, a third
area with infrared and red superluminous arrays combined and some areas utilizing only the laser probes, particularly if they are relatively small. The application of four or more different protocols initially and observation of the reaction of the lesion on each visit will quickly point to the most effective approach. This permits each therapist to develop protocols appropriate for that particular patient and these may eventually be transferable to other similar conditions. The net result is that each therapist will learn how to develop protocols most suitable for each problem, regardless of the type of pathology that exists.

Recently, I saw a patient with fairly severe chronic psoriasis in two areas. One was treated with the large surface array at red continuous for seven minutes. It disappeared completely after two treatment sessions. At the other site, we utilized infrared 100/80. It improved about 60% after two treatments. Conclusion: both protocols were applicable but red continuous was superior. After five sessions, both areas had cleared completely by using the protocols that were most effective.

Another recently assessed patient had eczema of all the extremities. Again, we used the red continuous with a rapid response. In another area we used infrared continuous, also demonstrating a rapid response. At other sites we used a combined approach. In this instance, the combined approach was superior to the other two. Again, this clearly indicates the need for an individualized approach to provide the foundation for effective therapy.

At this point, we have reached some firm conclusions, however we are continuing to learn from each situation regarding methodologies that are appropriate and provide the following guidelines:

1) Duration relates to the extent and severity of the lesion i.e. dimensions, elevation, degree of erythema, etc.
2) With the more chronic type lesion, the duration required may be longer than with relatively acute lesions that respond more rapidly.

3) Changes in protocol may not be required frequently, however they must be instituted at appropriate intervals.

4) Protocols must always be correlated with clinical response.

5) Initial protocols for eczema: red continuous wave, to be followed with red pulsed 10/50 and increase to 50/60 with progression to 100/80 as indicated.

Additional information will be provided as we proceed. Finally, it should be noted that the flexibility of the BioFlex System permits the unlimited development of protocols and therefore the device can be termed a “clinical laboratory”. The importance of this particular feature should be apparent.

**Protocol Update 8: Red Laser Probe - 100mW**

*December 2007*

The red laser probe is currently available, having undergone rigorous ergonomic and clinical testing over the past two years. This addition will complement the already existing 75 mW and 200 mW infrared probes. During the early 1990s, we developed a 25 mW red laser probe which we utilized extensively in our clinics but did not promote in the marketplace as the demand was limited, except by acupuncturists and dental operators. Several were acquired however, by clinicians who understood the importance of this probe. Most consumers felt that the cost could not be validated and we always choose to allow individuals to make their own informed decisions.
At the same time, we continued to use the 25 mW red laser probe in our clinics, with substantial impact in many situations. In view of this, in 2004 we decided to explore the benefits of a 100 mW red laser probe which we have now tested extensively over the past two years under controlled circumstances.

**Application:** The probe can be operated from low levels i.e. 10 mW to its 100 mW maximum output. Developed primarily for utilization in treating dermatological conditions and wound healing, it may also be used for the treatment of epicondylitis, rotator cuff injuries, carpal tunnel syndrome, etc. From a clinical perspective, the red laser probe may replace the use of the infrared probes in cases of superficial lesions. It may also be combined with the infrared probes in cases that have plateaued or are slow to respond. The length of application will be in the 1-10 minute range, depending on the extent of the underlying problem. As with all Bioflex arrays, the red laser probe can be used in both continuous and pulsed mode. The addition of this laser probe to your unit will be invaluable over time.