

Phone: (845) 624-0010 • Fax: (845) 624-0067 • Cell: (845) 558-8069 • 75 W. Rt. 59 Suite 2035, Nanuet, NY 10954 (upstairs inside the mall, opposite Lenscrafters)

Natural Pain Control – LASER acupuncture

In 1917, Albert Einstein already formulated the physical foundation for so-called light intensification with stimulated emission. In the field of medicine, laser not only allows careful treatment for patients but also, a manifold of selective therapies in nearly all special fields.

LASER, an acronym for *Light Amplification by Stimulated Emission of Radiation*, was finally developed in the early 60s. It is a form of electromagnetic radiation, in the visible or infrared region of the light spectrum, generated by stimulating a medium, which may be solid or gaseous, under special conditions. The beam of light thus generated has uses in almost every area of technology which exist today.

Laser was first used in the medical field as a focussed, high power beam with photo thermal effects in which tissue was vaporized by the intense heat. During the early phase of its use as a surgical tool, it was noted that there appeared to be less pain and inflammation following laser surgery than conventional surgery.

The photo-chemical effects of light in medicine are well known e.g. blue light is absorbed by bilirubin and thus undergoes photo-chemical change. This is the basis of the treatment of neonatal jaundice. Another use is that of ultraviolet light to treat psoriasis in PUVA treatment. The use of laser as a mechanism to induce photo-chemical changes in tissues is an extension of this effect.

Wavelength The wavelength of a laser is determined by the medium from which it is generated. Wavelengths of low power lasers include 904 nm (Gallium/Arsenide, diode) in the infra red region of the light spectrum. The wavelength is the prime determinant of tissue penetration. Lasers which penetrate less deeply are suitable for acupuncture point stimulation and biostimulation. Infra red lasers penetrate more deeply and are used in deeper tissue stimulation such as trigger points.

Laser may be used in three different ways

1. To stimulate acupuncture points

Laser is used to stimulate acupuncture points using the same rules of point selection as needle acupuncture. Laser acupuncture may be used solely or in combination with needles for any given condition over a course of treatment.

2. To treat trigger points

In some musculo-skeletal conditions higher doses of laser may be used for the deactivation of trigger points. Trigger points may be found in muscles, ligaments, tendons and periosteum. Direct irradiation over tendons, joint margins, bursae etc may be effective in the treatment of conditions in which trigger points may play a part. Children and the elderly may require smaller doses. Areas of thick skin or muscle may require higher doses for penetration than finer skin areas e.g. ear.

3. To promote healing

The biostimulatory effects of laser have been widely investigated both in vivo and in vitro .

In vitro experimental evidence has demonstrated acceleration of collagen synthesis in fibroblast cultures due to acceleration of mRNA transcription rate of the collagen gene. Superoxide dismutase activity is increased (this decreases prostaglandins). This is postulated as one mechanism of pain and oedema reduction. Other effects are: inhibition of procollagen production in human skin keloid fibroblast cultures and stimulation of phagocytosis by macrophages, increased fibroblast proliferation, as well a wide variety of cellular responses.

In vivo effects demonstrated in animals include increased formation of granulation tissue and increased rates of epithelialisation in laser irradiated wounds, stimulation of suppressor T-cells, increased collateral nerve sprouting and regeneration of damaged nerves in rats and tendon and ligament repair in race horses.

References

1. Smith K.C. *Light and Life: The Photobiological Basis of the Therapeutic Use of Radiation from Lasers. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 11-18.*
2. Oshiro T. *An introduction to LLLT. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 36-47.*
3. Motegi M. *Low Reactive Laser Therapy in Japan. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp75-80.*
4. Chow R.T. *Results of Australia-wide survey into Laser use. The Journal of the Australian Medical Acupuncture Society: Vol 12, No 2, 1994: 28-32*
5. Greenbaum, G.M. *The Bulletin of the Australian Medical Acupuncture Society ; Volume 6, No.2, 1987.*
6. Cassar E.J. *LLLT in Australia. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 63-65.*
7. McKibbin L.S. and Downie R. *LLLT in Canada. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 66-70.*
8. Goepel Roland, MD. *Low Level Laser Therapy in France. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 71-74.*
9. Motegi Mitsuo *Low Reactive-level Laser Therapy in Japan. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 77-80*
10. Professor Jae Kyu Cheun. *Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 81-82.*
11. Professor Yo-cheng Zhou. *Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 85-89.*
12. Moore, Kevin C. *Low Level Laser Therapy in the United Kingdom. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 94-101.*
13. Dyson, M. *Cellular and Subcellular aspects of Low Level Laser Therapy. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 221-224.*
14. Lubart, R., Friedmann, H., Faraggi, A. and Rochkind, S., (1991). *Towards a mechanism of low energy phototherapy. Laser Therapy, 1991; 3: 11-13.*
15. Smith, Kendric C. (1991). *The photobiological basis of low level laser radiation therapy. Laser Therapy, 1991; 3: 19-24.*

16. Gartner, C (1992). *Low reactive-level laser therapy (LLLT) in rheumatology: a review of the clinical experience in the author's laboratory. Laser Therapy, 1992; 4: 107-115.*
17. Ohshiro, T. and Shirono, Y. (1992). *Retroactive study in 524 patients on the application of the 830nm GaAlAs diode laser in low reactive-level laser therapy (LLLT) for lumbago. Laser Therapy, 1992; 4: 121-126.*
18. Trelles, M. A., Rigau, J., Sala, P. Calderhead, G. and Oshiro, T. (1991). *Infrared diode laser in low reactive-level laser (LLLT) for knee osteoarthritis. Laser Therapy, 1991, 3: 149-153.*
19. Kemmotsu, O., Sato, K., Furumido, H., Harada, K., Takigawa, C., Kaseno, S., Yokota, S., Hanaoka, Y. and Yamamura, T. (1991). *Efficacy of low reactive-level laser therapy for pain attenuation of postherpetic neuralgia. Laser Therapy, 1991; 3: 71-75.*
20. McKibbin, Lloyd S. and Downie, Robert. (1991). *Treatment of post herpetic neuralgia using a 904nm (infrared) low incident energy laser: a clinical study. Laser Therapy, 1991, 3: 35-39.*
21. Rigau, J., Trelles, M.A., Calderhead, R.G. and Mayayo, E. (1991). *Changes on fibroblast proliferation and metabolism following in vitro Helium-neon laser irradiation. Laser Therapy, 1991; 3: 25-33.*
22. Asada, K., Yutani, Y., Sakawa, A. and Shimazu, A. (1991). *Clinical application of GaAlAs 830nm diode laser in treatment of rheumatoid arthritis. Laser Therapy, 1991; 3: 77-82.*
23. Zheng, H., Qin, J-Z, Xin H. and Xin S-Y. (1993). *The activating action of low level Helium neon laser radiation on macrophages in the mouse model. Laser Therapy, 1993, 4: 55-58.*
24. Lubart, R., Friedmann, H., Peled, I. and Grossman, N. (1993). *Light effect on fibroblast proliferation. Laser Therapy, 1993; 5: 55-57.*
25. Karu, T. (1992). *Derepression of the genome after irradiation of human lymphocytes with He-Ne laser. Laser Therapy, 1992, 4: 5-24.*
26. Calderhead, R. Glen (1991). *Watts a Joule: on the importance of accurate and correct reporting of laser parameters on low reactive-level laser therapy and photobioactivation research. Laser Therapy, 1991; 3: 177-182.*
27. Bolton, P., Young, S. and Dyson, M. (1991). *Macrophage responsiveness to light therapy with varying power and energy densities. Laser Therapy, 1991; 3: 105-111.*
28. Matsumura, C., Murakami, F. and Kemmotsu, O. (1992). *Effect of Helium-Neon laser therapy (LLLT) on wound healing in a torpid vasculogenic ulcer on the foot: a case report. Laser Therapy, 1992; 4: 101-105.*
29. Smith, Kendrick C. (1991). *The photobiological basis of low level laser radiation therapy. Laser Therapy, 1991; 3: 19-24.*
30. Wolbarsht M.L. & Sliney D.H.: *Safety in LLLT. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 31-35*
31. Asada K., Yasutaka, Y., Kenjirou Y., Shimazu A. *Pain Removal of Rheumatoid Arthritis and Application of Diode Laser Therapy to Joint Rehabilitation. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 124-129.*
32. T., Wang Li-shi, and Yamada H. *A Review of Clinical Applications of LLLT in Veterinary Medicine. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy*

Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 162-169.

33. Terashima y., Kitagawa M., Takeda O., Sago H., Onda T and Nomuro K. *Clinical Application of LLLT in the Field of Obstetrics and Gynaecology. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 191-196*

34. Pontinen Pekka J. *Low Level Laser Therapy as a Medical Treatment Modality. Art Urpo Ltd. pp 37-38 1992*

35. Calderhead R. Glen. *Simultaneous Low Reactive-Level Laser Therapy in Laser Surgery: the alpha-phenomenon" explained. Progress in Laser Therapy. Selected Papers from the first meeting of the International Laser Therapy Association, Okinawa, 1990. Ed. Oshiro T and Calderhead R.G. pp 209-213.*

36. Mikhailov, V.A., Skobelkin, O.K., Denisov, I.N., Frank, G.A. and Voltchenko, N.N. (1993). *Investigations on the influence of low level diode laser irradiation on the growth of experimental tumours. Laser Therapy, 1993; 5: 33-38*

37. Schindl, L., Kainz, A. and Kern, H. (1992). *Effect of low level laser irradiation on indolent ulcers caused by Buerger's disease; Literature review and preliminary report. Laser Therapy, 1992, 4: 25-29.*

38. Matsumura, C., Ishikawa, F., Imai, M. and Kemmotsu, O., (1993). *Useful effect of application of Helium-neon LLLT on an early stage case of Herpes Zoster: a case report. Laser Therapy, 1993; 5: 43-46.*

39. Mester Andrew F. M.D. and Mester Adam M.D. *Laser Biostimulation in Wound Healing. Lasers in General Surgery. Williams & Williams Publ.*

40. Mester Endre et al. *The Biomedical Effects of Laser Application. Lasers in surgery and Medicine 5:31-39 1985*

41. Bischof Johannes J. M.D. *Use of the Laser Beam in Acupuncture. Acupuncture & Electro-therapeut. Res. Int. J.. Vol 5, pp. 29-40, 1980.*

42. Choi Jay J. M.D. *A Comparison of Electro-acupuncture, TENS and Laser Photo-Biostimulation on Pain Relief and Glucocorticoid Excretion. A Case Report. Acupuncture & Electro-therapeut. Res. Int. J.. Vol 11, pp. 45-51, 1986.*

43. Kreczi T. M.D., Klingler D. M.D. *A Comparison of Laser Acupuncture vs Placebo in Radicular and Pseudoradicular Pain Syndromes as Recorded by Subjective Responses of Patients. Acupuncture & Electro-therapeut. Res. Int. J.. Vol 11, pp. 207-216, 1986 1980.*

44. Xijing Wu & Yulan Cui. *Observations on the effect of He-Ne laser Acupoint Radiation in Chronic Pelvic Inflammation. Journal of Traditional Chinese Medicine 7(4): 263-265, 1987.*

45. Walker J. *Relief from Chronic Pain by Low Power Laser Irradiation. Neuroscience Letters, 43 (1983) 339-344.*

Phone: (845) 624-0010 • Fax: (845) 624-0067 • Cell: (845) 558-8069 • 75 W. Rt. 59 Suite 2035, Nanuet, NY 10954 (upstairs inside the mall, opposite Lenscrafters)