

A=Acupuncture & Trigger point, B=Basic Research, Bb=Blood Irradiation, D=Dermatology, Dd=Dental, ENT=Ears, Nose, Throat, G=Gynecology, Gm=General Medicine, Hp=High Power Laser, I=Intervenious, M=Meta-analysis, N=Neurology, Nt=Neural Therapy, O=Orthopedics, Op=Ophthalmology, P=Pain, R=Rheumatology, Rr=Report, S=Sports, T=Traumatology, U=Urology, V=Veterinary

B=Blind, CLIN=Clinical, DB=DoubleBlind, H=Hypothesis, RCT=Randomized Clinical Trial, RE=Review, VIT=In Vitro, VIV=In Vivo Study

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Code Letter	Indication	Author 1	Co-Authors	Name of Publication	Year of Publ.	Page Nr.	Title	Abstract	Key Words	B, CLIN, DB, H, RCT, RE, VIV, VIT	Lang.
D1	Wound Healing	Braverman B.	McCarthy R.J.	Lasers in Surgery and Medicine 9:50-58 (1989), © Alan R. Liss, Inc.	1989	50-58	"Effect of Helium-Neon and Infrared Laser Irradiation on Wound Healing in Rabbits"	We examined the biostimulating effects of helium-neon laser radiation (HeNe; 632.8 nm), pulsed infrared laser radiation (IR; 904 nm), and the two combined on skin wound healing in New Zealand white rabbits. Seventy-two rabbits received either 1) no exposure, 2) 1.65 J/cm <sup>2</sup> HeNe, 3) 8.25 J/cm <sup>2</sup> pulsed IR, or 4) both HeNe and IR together to one of two dorsal full-thickness skin wounds, daily, for 21 days. Wound areas were measured photographically at periodic intervals. Tissue samples were analyzed for tensile strength, and histology was done to measure epidermal thickness and cross-sectional collagen area. Significant differences were found in the tensile strength of all laser-treated groups (both the	biostimulation	VIV	GB
D1			Ivankovich A.D. Forde D.E. Overfield M. Bapna M.S.						low-energy densities skin wounds tensile strength  trichrome collagen stain wound area animal study rabbit HeNe IR 600-690 nm >900 nm 1.65 J/cm <sup>2</sup> 8.25 J/cm <sup>2</sup>		

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A1	Musculoskeletal trigger points	Snyder-Mackler L.	Bork C.  Bourbon B. Trumbore D.	Physical Therapy Volume 66, Number 7, 1087-1090, 1986	1986	1087-1090	"Effect of Helium-Neon Laser on Musculoskeletal Trigger Points"	Cold lasers have been proposed recently as a therapeutic tool for treating a wide variety of pathological conditions, including wounds, arthritis,	HeNe  trigger point muscles pain physical therapy	DB  VIV	GB
A2	Acupuncture	Ohshiro T.		Laser Therapy, 147-148, 1990© John Wiley & Sons, Ltd.	1990	147-148	"Acupuncture, Laser Acupuncture, And LLLT"	Review of Laser Acupuncture and LLLT by Toshio Ohshiro., Acupuncture, Ohshiro T.	review  acupuncture	CLIN	GB
A3	Migräne	Ho H.	Kropp P.  Wallasch T. Niederberger U. Weinschütz T.	AKU 27,3, 159-170, 1999	1999	159-170	"Zur Intervalltherapie der Migräne mit Laserakupunktur"	Die Akupunktur gewinnt als nebenwirkungsarmes Therapieverfahren zunehmende Bedeutung in der Kopfschmerz- und Migränetherapie. Unter	intervalltherapie  migräne akupunktur klinische parameter elektrophysiologische parameter	DB  CLIN	D
A4	Postoperative Vomiting in Children Undergoing Strabismus Surgery	Schlager A.	Offer T.  Baldissera I.	AKU 28,2, 102-104, 2000	2000	102-104	"Laser Stimulation of Acupuncture Point P 6 Reduces Postoperative Vomiting in Children Undergoing Strabismus Surgery"	Prävention von postoperativem Erbrechen bei Kindern nach Strabisoperationen durch Laserakupunktur des Akupunkturpunktes P 6., Postoperative Vomiting in Children Undergoing Strabismus Surgery, Schlager A., Offer T., Baldissera I., AKU 28,2, 102-104, 2000, "Laser Stimulation of Acupuncture Point P 6 Reduces	acupuncture  postoperative visible red diode laser	DB  CLIN	D

A4									strabismus surgery		
A5	Acute Headache Syndromes	Amoils S.	Kues J.	LLLT Original Articles, 155-157, 1991 © John Wiley & Sons, Ltd.	1991	155-157	"The Effect of Low Level Laser Therapy on Acute Headache Syndromes"	A study on the effect of low level laser therapy on acute headache syndromes was undertaken. Ten patients with acute vascular headache or occipital neuralgia	occipital neuralgia	CLIN	GB
A5									diode laser trigger points visible red vascular headache		
A6	Rhinopathia pollinosa	Langer H.	Hauswald B.	Dtsch. Zschr. Akup. 32/1989, 109-111			"Die therapeutische Wirkung der Akupunktur und Laserpunktur bei Patienten mit Rhinopathia pollinosa"	65 patients, suffering from Rhinopathia pollinosa, has been treated with acupuncture in a prospective randomized clinical simple blind study with exogen control. 22 patients of this group got normal acupuncture, 26 laserpuncture and 17	rhinopathia pollinosa	CLIN	D
A6									acupuncture HeNe	B	
A7	Regulationstherapie	Bergsmann O.		Ganzheitsmedizin, Nr. 2, 8 Jg., 7-14, 1995	1995	7-14	"Grundlagen und Möglichkeiten der Regulationstherapie mit Laser"	Der LPL kann unter bestimmten Voraussetzungen unter neuraltherapeutischen Gesichtspunkten eingesetzt werden. Seine Wirkung ist mit den üblichen Techniken vergleichbar. Die Unterschiede werden aufgezeigt. Die Wirkung des Lasers gibt darüber hinaus Anlass zum Überdenken eingeführter Denkmodelle.	regulationstherapie	RE	D
A7									neuraltherapie infrarot HeNe gesichtspunkten		
A8	Migraine Headaches	McKibbin L.S.	Downie R.	LLLT Original Articles, 23-28, 1993 © John Wiley & Sons, Ltd.	1993	23-28	"Treatment of Migraine Headaches Using Auricular Acupuncture Techniques"	Chronic Headaches of various etiologies are commonly managed by pharmacological and cognitive behaviour modification techniques. The use of Acupuncture Techniques has	auricular acupuncture	CLIN	GB
A8									headache migraine HeNe		



A14	Drug detoxification	Backmund M.	Meyer K	Dt. Ztschr.f.Akup. 4/1999	1999		"Akupunktur und stationärer Drogenentzug -eine kontrollierte Pilotstudie"	Since the seventies, acupuncture of the ear has been used in drug withdrawal in addicts of heroin and cocaine at the Lincoln Hospital in New York. An	drug detoxification	CLIN	D
A14			Baeyens H. Eichenlaub D.						acupuncture motivation		
A15,P	Erkrankungen des Bewegungsapparates	Caspers K.H.		Physikalische Medizin und Rehabilitation 18 Jahrgang, 1977,	1977	426-445	"Laser-Reiztherapie"	This paper deals with experiences gained from applications of a laser beam of 2 milliwatts intensity, which	locomotor system	CLIN	D
A15,P									migraine gonarthrosis		
A16	Laser-Akupunktur	Elias J.		CO'MED 1/97	1997		"Die Anwendung der Laser-Akupunktur"	Die Laser-Akupunktur hat sich durchgesetzt. Biologische Grundlagenversuche der 60er	acupuncture	RE	D
A17	Carpal-tunnel syndrome	Aigner N.	Zöch G.  Petje G.	Dt. Ztschr. F. Akup. 2/1999, 70-75	1999	70-75	"Laserakupunktur bei der präoperativen Schmerzbekämpfung beim Karpaltunnelsyndrom - eine prospektiv randomisierte Studie"	In this prospective, randomized and single-blind study the authors investigated, whether a soft-laser acupuncture showed a benefit in the preoperative treatment of patients suffering from carpal-tunnel syndrome. In one group acupuncture points were irradiated with soft-laser light while in the other group the	carpal-tunnel syndrome	RCT	D
A17									preoperative therapy concepts laser acupuncture		
A18	Epicondylitis lateralis humeri	Coenen C.H.M.	van Bergel A.F.M.	Productgroep "Onderzoek en Dienstverlening Gezondheidszorg" HvA		1-27	"Vergelijkend onderzoek tussen laser- en naaldacupunctuur bij epicondylitis lateralis humeri"	Het gebruik van laser in de acupunctuur is al vele jaren bekend en kent een langere historie dan de fysiotherapeutische toepassing ervan. Met de laserstraal worden acupunctuurpunten gestimuleerd	epicondylitis lateralis humeri	RE	NL
A18			Zalm J.						acupuncture		
A19,B	Blood Microcirculation	Skobelkin O.K.	Kozlov V.I.  Litwin G.D. Builin V.A. Gurovo O.A.	Laser Therapy Vol.2 No. 2, 69-77, 1990 © John Wiley & Sons, Ltd.	1990	69-77	"Blood microcirculation under laser physio - and reflexotherapy in patients with lesions in vessels of low extremities"	The effects of a low-intensity laser beam in the IR-range of the spectrum on blood microcirculation in man were studied when the projection of large blood vessels and acupuncture points were irradiated. A stimulating effect of laser irradiation on the	atherosclerosis of arteries in low extremities	CLIN	GB
									bulboangioscopy varices in low capillary		

			Azizov G.A.						capillarometry laser acupuncture laser blood semiconductor obliterating		
A19,B A20,G	Tubal Infertility	Deng Q.	Han Z.	Laser Therapy Vol.2, No.3, 117-118, 1990 © John Wiley & Sons, Ltd.	1990	117-118	"Therapy of female tubal infertility under defocused CO2 and He-Ne laser acupoint irradiation"	In this paper, 50 patients suffering from female tubal infertility had received the therapy of CO2 and He-Ne laser acupoint irradiation. The acupoints of "Uterus" and "Baliao" were selected for laser	tubal infertility  acupoint defocuse CO2 HeNe	CLIN	GB
A20,G A21,D	Scald Injury	He J.		Laser Therapy Vol.2, No.4, 179-180, 1990 © John Wiley & Sons, Ltd.	1990	179-180	"Clinical analysis of 100 cases of scald injury cured by HeNe laser acupuncture in combination with scanning LLLT"	Scald injuries are particularly seen in children and can be serious if not treated promptly. The present study summarizes the work by the author on a group of 100 scald injury patients, treated using HeNe laser acupuncture to the points	laser acupuncture  scald injury second degree burn HeNe scanner	CLIN	GB
A21,D A22	Prostatitis	Li S.	You S.  Zhang S.	Laser Therapy Vol.1, No.1, 37-40, 1989 © John Wiley & Sons, Ltd.	1989	37-40	"A new approach in the application of the helium-neon laser in acupuncture therapy for prostatitis: a clinical study involving 114 cases"	One hundred and fourteen patients with prostatitis were treated with laser needle acupuncture. This new method was based on the combination of both the biological effects of laser radiation of the human body and the therapeutic action of traditional Chinese needle acupuncture. The new method	acupuncture  needles HeNe prostatitis	CLIN	GB
A22 A23	Diarrhoea in children	He J.		Laser Therapy Vol.3, No.2, 93-95, 1991 © John Wiley & Sons, Ltd.	1991	93-95	"Clinical observation on 500 cases of diarrhoea in children treated with two helium-neon laser "light needles""	A study is presented involving 500 cases of infant diarrhoea treated by needlesless acupuncture using two HeNe laser "light needles", compared with 120 cases treated with conventional needle acupuncture. Patients' aaes	diarrhoea  laser acupuncture  light needle	CLIN	GB













B19	Wirkungsweise physikalischer Behandlungsmethoden	Warnke U.		collegium veterinarium XXIII, 150-154, 1992	1992	150-154	"Wirkungsweise physikalischer Behandlungsmethoden"		infrarot  ionen magnetfeld	RE	D
B19											
B20	Cellular Respiration	Warnke U.		Electromagnetic Bio-Information, 213-220		213-220	"Influence of Light on Cellular Respiration"	The early predecessors of all higher species in the world of plants, animals, and humanoids developed along their lines of	cellular respiration  absorption	VIT	GB
B20											
B21	Hemopoietic Cell Lines HL-60 and U937	O'Kane S.	Shields D.	Lasers in Surgery and Medicine 14:34-39, 1994 © Wiley-Liss, Inc.	1994	34-39	"Low Intensity Laser Irradiation Inhibits Tritiated Thymidine Incorporation in the Hemopoietic Cell Lines HL-60 and U937"	The purpose of this study was to determine the effect of low intensity laser irradiation on tritiated thymidine incorporation in two hemopoietic cell lines, HL-60 and U937. Cells were suspended at a concentration of 1 x 10 <sup>6</sup> /ml in their respective	cell proliferation  inhibition photobiology	VIT	GB
B21			Gilmore W.S. Allen J.A.								
B22	Fibroblast Proliferation and Metabolism	Rigau J.	Trelles M.A.	LLLT Original Articles, 25-33, 1991 © John Wiley & Sons, Ltd.	1991	25-33	"Changes in Fibroblast Proliferation and Metabolism Following In Vitro Helium-Neon Laser Irradiation"	Fibroblast viability, proliferation and metabolic changes were studied following in vitro irradiation with a continuous wave 10 mW helium-neon laser. Fresh first generation fibroblasts prepared directly from a healthy	bioactivation  proliferation metabolism collagen formation ATP HeNe	VIT	GB
B22			Calderhead R.G. Mayayo E.								
B23	Human dermis	Jacques S.L.	Alter C.A.	Lasers in the Life Sciences 1(4), 309-333, 1987 © Harwood Academic Publishers GmbH	1987	309-333	"Angular Dependence of HeNe Laser Light Scattering by Human Dermis"	A goniometric apparatus is presented for measuring the angular dependence of scattering of a HeNe laser beam by in vitro human dermis samples of	human dermis  HeNe scattering	VIT	GB
B23			Prahl S.A.								
B24	Injured Optic Nerve Degeneration	Rosner M.	Caplan M.	Lasers in Surgery and Medicine 13:611-617, 1993 © Wiley-Liss, Inc.	1993	611-617	"Dose and Temporal Parameters in Delaying Injured Optic Nerve Degeneration by Low-Energy Laser Irradiation"	Low-energy laser irradiation has been reported to postpone the degenerative processes in crushed optic nerves of rats, which are part of the nonregenerable mammalian central nervous system. In the present study, we evaluated the	biomodulation  biostimulation	VIV	GB
			Cohen S.								



B28	Wound healing processes and modulation of human immune system	Uitto J.	Lask G.P.				"Biological Effects of Low Energy Laser Irradiation: Evidence for Biostimulation of Wound Healing Processes and Modulation of Human Immune System In Vitro"		wound healing  immune system  biostimulation	VIT	GB
B28									gold vapor laser	VIT	GB
B29	Optical transmission properties	LaPlant M.	Parker J.	Lasers in Surgery and Medicine 7:336-338, 1987 © Alan R. Liss, Inc.	1987	336-338	"Comparison of the Optical Transmission Properties of Pulsed and Continous Wave Light in Biological Tissue"	The purpose of this study is to compare the optical transmission of the pulsed gold vapor laser to that of the continous wave argon-pumped dye laser in a homogenous tissue model. Gluteal muscle was taken from a rabbit, and sections of varying thicknesses were made. The	argon-pumped dye laser  photodynamic therapy optical transmission	VIT	GB
B29			Stewart B.  Waner M.  Straight R.C.								
B30	ATPase Activity Enhanced by GaAs Laser Irradiation	Majni G.	Bolognani L.	Physics in Environmental and Biomedical Research, 205-208, 1986 © World Scientific Publishing Co.	1986	205-208	"ATPase Activity Enhanced By GaAs Laser Irradiation"	It is well known the role of the adenosynetriphosphate in the energetic cellular exchanges. Different ATPases are under ionic control. The GaAs laser effects on ATPase Na+ and K+ dependent activity of both	ATP  GaAs enzyme activity	VIV  VIT	GB
B30			Davolio E. Volpi N.								
B31	Light action on cellular level	Karu T.		Proceedings of SPIE Vol. 4159, 2000 © SPIE	2000		"Mechanisms of Low-Power Laser Light Action on Cellular Level"	The most frequently used mechanism of photon energy conversion in laser medicine is heating. Average heating of	cellular level	VIT	GB
B32	Dose distribution in living tissue	Hode L.	Tunér J.	Proceedings of SPIE Vol. 4166, 2000	2000		"Dose distribution in living tissue at different wavelengths, power densities and incident target area"	In the literature, the given parameters are seldom well enough specified. Because of that, it is not possible to repeat a study, even if the intention is to repeat it, it will always be a new and different one. The dose, for instance, is usually given as a	dose distribution  HeNe	RE	GB

B32									diode laser fluence		
B33	Characterization of Light Penetration in Rat Tissues	Melo C.A.S.	Lima A.L.L.A.	Journal of Clinical Laser Medicine & Surgery, Vol. 19 No 4, 175-179, 2001 © Mary Ann Liebert, Inc.	2001	175-179	"Characterization of Light Penetration in Rat Tissues"	The goal of this study is to determine the optical properties of different rat tissues with respect to spatial intensity variation and light	light penetration	VIT	GB
B33			Brasil I.R.C. Castro E Silva Jr. O. Magalhaes D.V. Marcassa L.G. Bagnato V.S.						rats animal study  CCD camera liver light distribution		
B34	Electromagnetic processes within the Mitochondrial Energy Transfer	Wilden L.	Karthein R.	XII Congress of ISLSM Rostock/Germany, Sept. 11.-13.1997 and Laser Florence '95, 5th International Congress of EMLA, Florence, Italy, Sept. 18.-20.1997	1997		Reflections on the importance of electromagnetic processes within the mitochondrial energy transfer"		mitochondria	H	GB
B34									energy transfer  electromagnetic process		
B35	Respiratory Burst in Bovine Neutrophils	Duan R.	Cheng-Yi Liu T.	Lasers in Surgery and Medicine 29:174-178, 2001 © Wiley-Liss, Inc.	2001	174-178	"Signal Transduction Pathways Involved in Low Intensity He-Ne Laser-Induced Respiratory Burst in Bovine Neutrophils: A Potential Mechanism of Low Intensity Laser Biostimulation"	Low intensity HeNe laser irradiation has been reported to induce respiratory burst of neutrophils for a long time, but the mechanism remains obscure. We speculated that it is mediated by some signal transduction pathways. The protein tyrosine kinases inhibitor, genistein, the phospholipase C inhibitor, U-73122, and the protein kinase C inhibitor, calphostin C, were used to probe signal transduction pathways of	neutrophil	VIT	GB
B35			Li Y.  Guo H. Yao L-B.						respiratory burst  HeNe transduction pathway		
B36	Myocardial infarction	Ad N.	Oron U.	International Journal of Vardiology 80, 109-116, 2001 © Elsevier Science Ireland Ltd.	2001	109-116	"Impact of low level laser irradiation on infarct size in the rat following myocardial infarction"	Low energy level irradiation has been found to modulate biological processes. The effect of LLLI on the development of acute myocardial infarction was investigated following chronic ligation of the left anterior	myocardial infarction	VIV	GB
									ischemia		









B47	Laser Strahlung auf Zellen	Wilden L.	Karthein J.	Laser Journal 1/2002			"Der Wirkungsmechanismus von Low Level Laser Strahlung auf Zellen"	Die aus der Lasertechnik entwickelte Low Level Laser Therapie befindet sich seit Jahren in einer deutlichen Expansion und gewinnt zunehmend an experimenteller,	zellen	H	D
B47			Karthein R.						wirkungsmechanismus		
B48	Human erythrocyte membranes	Kilanczyk E.	Palecz D.	Journal of Clinical Laser Medicine & Surgery, Vol 20 No 2, 2002 © Mary Ann Liebert, Inc.			"Effect of Red Laser Light on Na <sup>+</sup> , K <sup>+</sup> -ATPase Activity in Human Erythrocyte Membranes Sensitized with Zn-Phthalocyanine"	The influence of laser light on human erythrocyte membrane Na <sup>+</sup> , K <sup>+</sup> -ATPase activity in the presence and absence of Zn-phthalocyanine was studied. The response of erythrocyte membranes to low-power laser irradiation has not been fully elucidated. In our study, we	erythrocyte membranes	VIT	GB
B48			Bryszewska M						visible ATPase enzyme activity		
B49	Absorbance of monolayer of living cells	Karu T.I	Afanasyeva N.I.	IEEE Journal on selected topics in quantum electronics vol 7, no 6, 2001 © IEEE	2001	982-988	"Changes in Absorbance of Monolayer of Living Cells Induced by Laser Radiation at 633, 670, and 820 nm"	Redox absorbance changes in living cells under laser irradiation at 633, 670nm, and 802nm have been studied by the method of multichannel recording in spectral range 530-890 nm. It has been found that the irradiation	cytochrome c oxidase	VIT	GB
B49			Kolyakov S.F.						redox-absorbance changes in living cells		
B49			Pyatibrat L.V. Welsler L.						cells HeLa cells		
B50	Circular dichroism spectra of living cells	Karu T.I	Kolyakov S.F.	IEEE Journal on selected topics in quantum electronics vol 7, no 6, 2001 © IEEE	2001	976-981	"Irradiation With a Diode at 820 nm Induces Changes in Circular Dichroism Spectra of Living Cells"	A sensitive method for measuring the circular dichroism of living HeLa cells in the visible-near infrared region is developed. The changes in CD spectra from 250 to 780 nm of HeLa cell suspension after the first and second irradiation at 820	circular dichroism of cells	VIT	GB
B50			Pyatibrat L.V. Mikhailov E.L. Kompanets O.N						cytochrome c oxidase HeLa cells cells		
B51	Calcium uptake by macrophages	Young S.R.	Dyson M.	Laser Therapy Vol.2 No. 2, 53-57, 1990 © John Wiley & Sons, Ltd.	1990	53-57	"Effect of light on calcium uptake by macrophages"	The effect of light on calcium uptake by U937 cells was studied using <sup>45</sup> Ca radiotracer techniques. Cells were treated	<sup>45</sup> Ca	VIT	GB
			Bolton P.						energy density fibroblast		



B55	Photobiological Basis of LLLT	Smith K.C.		Laser Therapy Vol.3, No.1., 19-24, 1991 © John Wiley & Sons, Ltd.	1991	19-24	"The photobiological basis of low level laser radiation therapy"	Low level laser radiation therapy is effective in a number of clinical situations, but the photobiological basis of this therapy is not well-understood.	photobiological basis of LLLT  action spectra quantum yield absorption spectra  first law of photochemistry true photochemical sensitivity photoactivation of enzymes  photomodulation of membranes	H	GB
B55											
B56	Thyroid "C" Cells	Ayala J.M.	Hernandez L.C.	Laser Therapy Vol.3, No3., 123-127, 1991 © John Wiley & Sons, Ltd.	1991	123-127	"Structural and immunohistochemical study of low incident energy infrared laser radiation on thyroid "C" cells in white rats demonstrates an increased immunohistochemical reaction"	The effect of Infrared-Laser radiation on white rat thyroid C cells was studied structurally employing toluidine blue staining of semifine slices, and immunohistochemically employing staining to demonstrate and assay the presence of somatostatin and calcitonin. There were 55 rats in the study population. Ten animals served as unirradiated	laser-induced somatostatin  calcitonin thyroid photoimmunoproducs infrared	VIV	GB
B56											
B57	Growth of Experimental Tumours	Mikhailov V.A.	Skobelkin O.K.	Laser Therapy Vol.5, No.1, 33-38, 1993 © John Wiley & Sons, Ltd.	1993	33-38	"Investigations on the influence of low level diode laser irradiation on the growth of experimental tumours"	Investigations on rats with an implanted tumour - carcinosarcoma of Walker, cancer of the mammary glands, RMK-1 and in mice with spontaneous cancer of the mammary gland -have shown	experimental tumours  tumour growth life-span  diode laser	VIV	GB
B57			Denisov I.N. Frank G.A. Voltchenko N.N.								

B58	Reactive Oxygen Species	Yamaya M.	Shiroto C.  Kobayashi H. Naganuma S.  Sakamoto J. Suzuki K-J. Nakaji S. Sugawara K.  Kumae T.	Laser Therapy 5;111-116, 1993 © John Wiley & Sons, Ltd.	1993	111-116	"Mechanistic approach to GaAlAs diode laser effects on production of reactive oxygen species from human neutrophils as a model for therapeutic modality at cellular level"	There have been many reports on the applications of low reactive level laser therapy for pain attenuation or pain removal. Our group has reported previously on the effects of in vitro irradiation of LLL particularly on the phagocytic activity of human neutrophils, using luminol-dependent chemiluminescence for measurement of reactive oxygen species production from human neutrophils. But the	luminol- and lucigenin-dependent chemiluminescence  human neutrophils  reactive oxygen species GaAlAs diode laser cellular level  NADPH-oxidase ROS	VIT	GB
B58											
B59	Macrophage responsiveness	Rajaratnam S.	Bolton P.  Dyson M.	Laser Therapy Vol.6, No.2, 107-112, 1994 © Laser Therapy, Ltd.	1994	107-112	"Macrophage responsiveness to laser therapy with varying pulsing frequencies"	Macrophages are a source of many important mediators of wound repair. Cells of a established macrophage-like cell line were exposed in vitro to a 820 nm coherent light source, at	cyclotron effect  fibroblast proliferation frequency nogier	VIT	GB
B59											
B60	Growth of Microbes	Sachdeva R.	Bhagwanani N.S.  Chitnis D.S.	Laser Therapy Vol.7, No.1, 023-026, 1995 © Laser Therapy, Ltd.	1995	23-26	"The nitrogen laser inhibits the growth of wide range of microbes in vitro"	With the report on promising therapeutic effects of nitrogen laser to treat tuberculous lung cavities, studies were carried out to examine the in vitro effects of	nitrogen laser  antimicrobial tuberculosis multiple drug resistant bacteria  gram positive bacteria gram negative bacteria	VIT	GB
B60											
B61	Fibroblasts	Lubart R.	Friedmann H.	Laser Therapy Vol.7, No.3, 101-106, 1995 © Laser Therapy, Ltd.	1995	101-106	"Biostimulation of photosensitized fibroblasts by low incident levels of visible light energy"	It was long assumed that visible and near infrared light does not interact with tissue. In the past three decades, however, it has been found that lasers in the visible and near infrared cause	photosensitization	VIT	GB

B61			Sinykov M. Grossman N.					photochemical reaction photophysical reaction phototherapy photodynamic therapy			
B62	Human Neutrophils	Sachdeva R.	Bhagwanani N.S.  Chitnis D.S.	Laser Therapy Vol.7, No.3, 107-112, 1995 © Laser Therapy, Ltd.	1995	107-112	"Low incident energy levels of the nitrogen laser enhances the biocidal activity of human neutrophils on internalized bacteria: an in vitro study"	The activation effect of the nitrogen laser with an energy density of 5.4 J/cm <sup>2</sup> and exposure time of 15 minutes was studied in vitro on the biocidal efficiency of human neutrophils on internalized bacteria. Experimental models used previously have ruled out the direct inactivating effect of the	phagocytosis  human neutrophils nitrogen laser intracellular bacteria	VIT	GB
B63	Cytosolic Calcium Oscillations	Friedmann H.	Lubart R.	Laser Therapy Vol.8, No.2, 137-142, 1996 © LT Publishers. Ltd	1996	137-142	"Photobiostimulation by light-induced cytosolic calcium oscillations"	We discuss light-induced stimulation of biological activity in terms of cytosolic calcium ion concentration oscillations triggered by visible or infrared	photobiomodulation  calcium oscillations redox activity reactive oxygen species	VIT	GB
B64	Intracellular CA <sub>2</sub> <sup>+</sup> Concentration in Fibroblasts	Lubart R.	Friedmann H.  Sinyakov M. Shiman A.  Grossman N. Adamek M. Shainberg A.	Laser Therapy Vol.9, No.3, 115-120, 1997 © LT Publishers, U.K., Ltd.	1997	115-120	"The effect of HeNe laser (633nm) radiation on intracellular CA <sub>2</sub> <sup>+</sup> concentration in fibroblasts"	The increasing use of phototherapy has led to a great interest in the mechanism of light-biosystem interaction. Therefore, recent observations on the enhancement of the proliferation of irradiated skin cells by visible	low energy lasers  fibroblasts intracellular concentration skin cells HeNe proliferation	VIT	GB
B65	T-lymphocyte Proliferation	Agaiby A.	Ghali L.  Dyson M.	Laser Therapy Vol.10, No.4, 153-158, 1998 © LT Publishers, U.K., Ltd.	1998	153-158	"Laser modulation of t-lymphocyte proliferation in vitro"	The effect of coherent light on the proliferation of resting and mitogen transformed T-lymphocytes was investigated in vitro. T-cells were separated from human peripheral blood by Ficoll-	T-lymphocytes  mitogen	VIT	GB

B65									cell proliferation		
B66	Human Macrophages	Hemvani N.	Chitnis D.S.  Bhagwanani N.S.	Laser Therapy Vol.10, No.4, 159-164, 1998 © LT Publishers, U.K., Ltd.	1998	159-164	"Effect of Helium-Neon laser on cultured human macrophages"	Low incident doses of Helium-Neon laser therapy are routinely used in our institute as an adjunct to chemotherapy for treating cases of tuberculosis.	macrophage cells  TNF-alpha  HeNe GM-CSF tuberculosis cytokines	VIT	GB
B66											
B67	Myogenic Satellite Cells	Shefer G.	Halevy O.  Cullen M. Oron U.	Laser Therapy Vol. 11, No. 3, 114-118, 1999	1999	114-118	"Low level laser irradiation shows no histopathological effect on myogenic satellite cells in tissue culture"	It has been found that low energy laser exposure can affect various processes in cells and tissues. The effects of direct HeNe laser on the histopathology of a primary culture of satellite cells isolated from rat skeletal muscle was investigated using electron	skeletal muscle   satellite cell electron microscopy HeNe	VIT	GB
B67											
B68	Hamster Egg Penetration	Lubart R.	Breitbart H.  Sofer Y.  Lavie R.	Laser Therapy Vol.11, No. 4, 171-176, 1999	1999	171-176	"He-Ne irradiation of human spermatozoa: enhancement in hamster egg penetration"	Irradiation of human spermatozoa with a He-Ne laser resulted in a significant increase in its hamster egg penetration ability. This has been studied by using the zona-free hamster egg penetration model. The effect	visible   reactive oxygen species  electron paramagnetic resonance human spermatozoa HeNe	VIT	GB
B68											
B69	Interstitial scarring	Yaakov N.	Ben-Haim S.A.  Oron U.	Laser Therapy Vol.11, No.4, 190-197, 1999	1999	190-197	"Low level laser irradiation reduces interstitial scarring in the isoproterenol-induced hypertrophic rat heart"	Low level laser irradiation has been shown to modulate various biological processes. We have recently shown that LLLI has a profound effect on reduction of infarct size and ventricular dilatation post myocardial infarction in small and large experimental animals. In the	cardioprotection   hypertrophy interstitial scarring	VIV	GB





B73	Hepatocyte Permeability	Onac I.	Pop L.  Onac I. Ungur R.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 157-165, 2002 © Monduzzi Editore S.p.A.	2002	157-165	"Hepatocyte Permeability in Humans and in Experiment Animals After Laser Biostimulation"	Objective to study hepatocyte permeability in humans and in Cavia Cabaia. GOT and GPT enzymes were studied.	hepatocyte permeability  biostimulation GaAAs HeNe monochromatic red light enzyme changes	VIV	GB
B74	Cerebral Blood Flow	Yokoyama K.	Sugiyama K.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 177-180, 2002 © Monduzzi Editore S.p.A.	2002	177-180	"Influence of Linearly-polarized Near-infrared Irradiation Around Unilateral Stellate Ganglion on Cerebral Blood Flow: Analysis Using Transcranial Near-Infrared Spectroscopy"	It is known that linearly-polarized near-infrared irradiation around a unilateral stellate ganglion area has different biological effects from unilateral stellate ganglion block. We investigated the influence of unilateral SGR on bilateral cerebral hemoglobin volumes using transcranial near-infrared spectroscopy. Bilateral cerebral total, oxygenated and deoxygenated hemoglobin volumes at 3cm and 5cm below	near-infrared  stellate ganglion  cerebral blood flow near-infrared spectroscopy	VIV	GB
B75	Attenuation and Penetration of Light in Soft Tissues	Enwemeka C.S.		Laser Therapy Vol.13, 2001	2001	95-101	"Attenuation and Penetration of Visible 632.8nm and Invisible Infra-red 904nm Light in Soft Tissues"	We studied the depth of penetration and the magnitude of attenuation of 632.8nm and 904nm light in skin, muscle, tendon, and cartilagenous tissues of live anaesthetized	light attenuation  light absorption  animal study various wavelengths	VIV	GB
B76	Optical and Biochemcial Properties of Glutamate Dehydrogenase	Ostuni A.	Passarella S.  Quagliariello E.	Proceedings of the round table on "Basic and applied research in photobiology and photomedicine" Trani 10-11 November 1990	1990		"The Effect of Helium-Neon Laser Irradiation on Optical and Biochemical Properties of Glutamate Dehydrogenase"	Over the last few years there has been a growing interest in the biological effect of visible radiation upon living matter. Although an increasing number of clinical reports claims that tissue irradiation with low power Helium-Neon laser gives	HeNe  coherent light non-coherent light	VIT	GB



B80	Deformability of Human Stored Erythrocytes	Yokoyama K.	Sugiyama K.	Journal of Clinical Laser Medicine & Surgery, Vol 21, No. 1, 19-22. 2003 © Mary Ann Liebert, Inc.	2003	19-22	"Influence of Linearly Polarized Near-Infrared Irradiation on Deformability of Human Stored Erythrocytes"	To investigate the influence of linearly polarized near-infrared irradiation using the Super Lizer on deformability of human erythrocytes. Not only low-powered laser but also linearly polarized near-infrared beams have some biostimulation	near infrared  erythrocytes super lizer polarized HeNe	VIT	GB
B81	Cell Growth and Procollagen Synthesis	Pereira A.N.	Eduardo C.P.  Matson E. Margues M.M.	Lasers in Surgery and Medicine 31:263-267, 2002	2002	263-267	"Effect of Low-Power Laser Irradiation on Cell Growth and Procollagen Synthesis of Cultured Fibroblasts"	In dentistry, low-power lasers have been used in the treatment of dentin hypersensitivity, gingivitis, periodontitis, and different forms of oral ulcers. This in vitro study focuses on the biostimulation of NIH-3T3 fibroblasts by a low-power Ga-As-	biostimulation  cell culture cell proliferation  collagen GaAs pulsed	VIT	GB
B82	Cerebral Ischemia & Nitric Oxide Synthase	Leung M.C.P.	Lo S.C.L.  Siu F.K.W. So K.F.	Lasers in Surgery and Medicine 3:283-288, 2002 © Wiley-Liss, Inc.	2002	283-288	"Treatment of Experimentally Induced Transient Cerebral Ischemia With Low Energy Laser Inhibits Nitric Oxide Synthase Activity and Up-Regulates the Expression of Transforming Growth Factor-Beta 1"	Nitric oxide has been shown to be neurotoxic while transforming growth factor beta 1 is neuroprotective in the stroke model. The present study investigates the effects of low energy laser on nitric oxide synthase and TGF-beta1 activities after cerebral ischemia and reperfusion injury. Cerebral ischemia was induced for 1 hour in male adult Sprague-Dawley rats with unilateral occlusion of middle cerebral artery. Low energy laser irradiation was then	nitric oxide  stroke transforming growth factor GaAs cerebral ischemia  rats animal study	VIT	GB

B83	Hard Tissue Generation	Nagasawa A.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 53-58, 2002 © Monduzzi Editore S.p.A.	2002	53-58	"Hard Tissue Generation Activation Effect of Lasers"	Since the reports on therapeutic utilities of low power lasers by Mester and Plog the therapeutic effect in the biostimulation of low reactive level lasers has been greatly noticed. The author has	biostimulation	RE	GB
B83									hard tissue		
D1	Wound Healing	Braverman B.	McCarthy R.J.	Lasers in Surgery and Medicine 9:50-58 (1989), © Alan R. Liss, Inc.	1989	50-58	"Effect of Helium-Neon and Infrared Laser Irradiation on Wound Healing in Rabbits"	We examined the biostimulating effects of helium-neon laser radiation (HeNe; 632.8 nm), pulsed infrared laser radiation (IR; 904 nm), and the two combined on skin wound healing in New Zealand white rabbits. Seventy-two rabbits received	biostimulation	VIV	GB
			Ivankovich A.D. Forde D.E. Overfield M. Bapna M.S.						low-energy densities skin wounds tensile strength		
D1									trichrome 8.25 J/cm2		
D2	Dermatoses	Chlebarov S.		Medical Focus 3/1988	1988	48-49	"Laser therapy Treatment of large-area dermatoses with He-Ne and infrared lasers"	The commonest application of lasers in medical therapy at the present time is the helium-neon laser used in combination with infrared lasers in dermatology and allergology. The results of	dermatoses	CLIN	GB
D2									visible		
D3	Epidermales Stoffwechsel-Modell	Pratzel H.		Z. Phys. Med. Baln. Med. Klim. 13 (1984) 227-234	1984	227-234	"Zum Einfluss von monochromatischer Rotlichtbestrahlung (LASER 632,8 nm) auf ein epidermales Stoffwechsel-Modell"	Bei 20 hautgesunden Personen im Alter zwischen 14 und 60 Jahren wurde eine bestimmte, unbehaarte Stelle an der Innenseite des rechten Unterarms mit einem He/Ne-Gas-Laser (MBB, Typ BioLas) (632,8 nm, 5 mW) bestrahlt. Bestrahlungsabstand und -dauer	epidermales Stoffwechselmodell	VIV	D
D3		Chlebarov S.							600-690 nm 1.5 J/cm2		
D4	Hypertrophic Scar-derived Fibroblasts	Webb C.	Dyson M.	Laser in Surgery and Medicine 22:294-301 (1998), © Wiley-Liss Inc.	1998	294-301	"Stimulatory Effect of 660 nm Low Level Laser Energy on Hypertrophic Scar-derived Fibroblasts: Possible Mechanisms for Increase in Cell Counts"	Varying effects of red light wavelengths on in vitro cells have been reported. Low level lasers (LLL) are employed to assists wound healing especially for indolent ulcers. on healing, burn wounds may become hypertrophic, resulting in excessive wound contraction, poor cosmesis, and functional impairment. This study enquired	in vitro fibroblasts	VIT	GB
			Lewis W.H.P.						LLLT		

D4									4 J/cm2		
D5	Plastic Surgery	Ginsbach G.		Laser Therapy, 1993; 5: 169-173, © John Wiley & Sons. Ltd.	1993	169-173	"Laser Biostimulation In Plastic Surgery"	In the past 30 years the interest in problems of wound-healing has dramatically increased.	Laser-biostimulation Plastic surgery	CLIN	GB
D5									LLLT		
D6	Sepsis by Photobiomodulation	Yu W.	Chi L.H.  Naim J.O. Lanzafame R.J.	Lasers in Surgery and Medicine 21:262-268 (1997), © Wiley-Liss Inc.	1997	262-268	"Improvement of Host Response to Sepsis by Photobiomodulation"	Late sepsis causes immunosuppression and is associated with energy depletion in lymphocytes. Adjuvant treatment with ATP-MgCL2 appears to improve cellular	sepsis  photobiomodulation rats	VIV	GB
D6									5 J/cm2		
D7	Postoperative/Cosmetic	Katalinic D.		LLLT Original Articles, 63-65, 1991, © John Wiley & Sons, Ltd.	1991	63-65	"LLLT For Postoperative Treatment In Cosmetic Surgery"	During cosmetic surgical procedures, the operative field and surrounding tissue are often subjected to fairly rough handling, and traumatic tissue	biostimulation  bioactivation postoperative trauma lipofilling LLLT HeNe	CLIN	GB
D7											
D8	Grossflächige Laseranwendung	Katalinic D.		Hautnah 2/1996 schweiz, 73-77	1996	73-77	"Grossflächige Laseranwendung vs. Verbrennungstrauma"	Unsere klinischen und laboratorischen Untersuchungen haben gezeigt, dass grosse Flächen, die durch den Laser (CO2 oder YAG) verursacht	Grossflächige Laseranwendung	CLIN	D
D8									YAG-laser		
D9	Post Herpetic Neuralgia	McKibbin L.S.	Downie R.			1-5	"Treatment of Post Herpetic Neuralgia Using 904 nm Low Energy Laser (Infrared): A Clinical Study"	Shingles is becoming an affliction of the elderly. Herpes zoster - the viral cause of shingles - is a member of the herpes family of organisms. Herpes 1 causes cold sores and Herpes 2 causes genital	infrared	CLIN	GB
D9									>900 nm 4 J/cm2		
D10	Venous Ulcers	Kleinman Y.	Simmer S.  Brakma Y. Morag B.	Laser Therapy, 1996: 8: 205-208, © LT Publishers, U.K., Ltd.	1996	205-208	"Low Level Laser Therapy In Patients With Venous Ulcers: Early and long-term Outcome"	The effectiveness of low level laser therapy in accelerating wound healing has been clinically well documented. We report our experience treating 42 patients with resistant venous	LLLT  laser therapy venous stasis ulcer	CLIN	GB

D10			Lichtenstein D.						wound healing infrared		
D11	Venous Ulceration	Lagan K.M.	McDonough S.M.	Journal of Clinical Laser Medicine & Surgery, Volume 18, Number 1, 2000, 15-22. ©Mary Ann Liebert, Inc.	2000	15-22	"A Case Report of Low Intensity Laser Therapy (LILT) in the Management of Venous Ulceration: Potential Effects of Wound Debridement upon Efficacy"	This single case report (ABA design) was undertaken as a preliminary investigation into the clinical effects of low intensity laser upon venous ulceration, applied to wound margins only, and the potential relevance of wound debridement and wound measurement techniques to any effects observed. Methods: Ethical approval was granted by	LILT	CLIN	GB
D11			Clements B.A. Baxter G.D.						800-900 nm 9 J/cm2		
D12	Dermatologie	Landthaler M.	Haina D.	Der Hautarzt (1981) 32: 450-454, ©Springer-Verlag	1981	450-454	"Therapeutische Laseranwendungen in der Dermatologie"	Lasers are used increasingly in dermatology. The use of different laser types for various indications is discussed. Nevi	dermatotherapy	CLIN	D
D12			Waidelich W. Braun-Falco O.						wound healing low-energy densities malignant tumors melanoma		
D13	Postzosterischen Schmerzen	Landthaler M.	Haina D.	Fortschritte der Medizin 101. Jg., Nr. 22 (1983), 1039-1041	1983	1039-1041	"Behandlung von Zoster, postzosterischen Schmerzen und Herpes simplex recidivans in loco mit Laser-Licht"	Herpes simplex recidivans in loco und postzosterische Neuralgien stellen auch heute noch therapeutische Probleme dar. Angeregt durch entsprechende Mitteilungen in der Literatur (Calderhead et al.	zoster	CLIN	D
D13	Zoster Herpes simplex		Waidelich W.						schmerzen herpes simplex krypton-ionen-laser 600-690 nm		
D14	Wundheilung	Haina D.	Brunner R.	Der Hautarzt, Supplementum V, 32. (1981) 429-431, ©Springer-Verlag	1981	429-431	"Stimulierung der Wundheilung mit Laserlicht - Klinische und tierexperimentelle Untersuchungen Wundheilung"	Nachdem es Maiman 1960 gelang, einen Laser in Betrieb zu nehmen, setzte eine stürmische Entwicklung ein, die schliesslich auch zum Einsatz von Lasern in verschiedensten Disziplinen der Medizin führte. Das Wort Laser ist eine Abkürzung für Light	tier	CLIN	D
D14			Landthaler M. Waidelich W. Braun-Falco O.						wundheilung stimulierung ulcera cruris krypton-ionen-laser 600-690 nm		





D20	Wound Healing	Lyons R.F.	Abergel R.P.  White R.A. Dwyer R.M. Castel J.C. Uitto J.	Annals of Plastic Surgery Vol 18, No 1, 1987, 47-50	1987	47-50	"Biostimulation of Wound Healing in Vivo by a Helium-Neon Laser"	Clinical observations have suggested that low-energy lasers might stimulate wound healing. To understand the mechanism of	biostimulation  wound healing HeNe mice animal study 1.22 J/cm2	VIV	GB
D21	Ulcera, decubitus	Theriseaux F.	Stotzer Y.  Wyer J.	Diplomarbeit, 1-51		1-51	"Lasertherapie bei Wunden, Ulcera und Decubitus"	In dieser Arbeit konzentrieren wir uns auf die Behandlung von Ulcera, Decubiti und Wunden. In einem ersten theoretischen Block sind die verschiedenen	diplomarbeit  ulcera decubitus  wunden	CLIN	D
D22	Wound healing, in vivo and in vitro	Halevy S.	Lubart R.  Reuveni H. Grossman N	Laser Therapy, 1997: 9: 159-164, ©LT Publishers, U.K., Ltd.	1997	159-164	"Infrared (780 nm) Low Level Laser Therapy for Wound Healing: In Vivo and In Vitro Studies"	The potential therapeutic Effect of 780 nm low power diode laser irradiation (LPDL) was evaluated in vivo on wound healing, and in vitro on proliferation of cultured normal human fibroblasts (NHF)	fibroblasts  skin fissures keratinocytes infrared	VIT  VIV	GB
D23	Lymphocytes	Stadler I.	Evans R.  Kolb B. Naim J.O. Narayan V. Buehner N. Lanzafame R.J.	Lasers in Surgery and Medicine 27:255-261 (2000), ©Wiley-Liss Inc.	2000	255-261	"In Vitro Effects of Low-Level Laser Irradiation at 660 nm on Peripheral Blood Lymphocytes"	The effects of low-level laser light irradiation are still highly contested, and the mechanisms of its action still unclear. This study was conducted to test the effects of low-level laser	biostimulation  cell-culture free radicals hemoglobin laser therapy LLLT 600-690 nm	VIT	GB
D24	Tensile strength of Microsutures	Menovsky T.	Beek J.F.  van Gemert M.J.C.	Lasers in Surgery and Medicine 20:64-68 (1997), ©Wiley-Liss, Inc.	1997	64-68	"Effect of the CO2 Milliwatt Laser on Tensile Strength of Microsutures"	Laser-assisted tissue repair is often accompanied by a high dehiscence rate, which may be due to alterations in suture material after laser exposure. The	laser microsurgery  10-0 nylon microsutures	VIT	GB

D25	Vaskulitis am diabetischen Fuss	Baxas A.	Picht J.W.	Baxamed Medical Center, 2000	2000	1	"Laser und Plaques bei kryoglobulinämie bedingter Vaskulitis am diabetischen Fuss"	Ein 53 jähriger Patient mit bekanntem nicht-insulin-abhängigem Diabetes mellitus seit 5 Jahren sowie einer aktiven Hepatic C Infektion unbekannter Dauer und Herkunft entwickelte über Nacht an den Zehen I+II des	diabetischen Fuss  800-900 nm infrared 4 J/cm2	CLIN	D
D26	Biomedical Effects	Mester E.	Mester A.F.	Lasers in Surgery and Medicine 5:31-39 (1985), ©Alan R. Liss, Inc.	1985	31-39	"The Biomedical Effects of Laser Application"	This paper briefly reviews the authors' experimental and clinical use of lasers over a 20-year period, during which laser	laser beam  laser biostimulation non-healing ulcers	CLIN	GB
D27	Wound-healing stimulation	Mester E.		Laser 75 Optoelectronics Conference Proceedings, 119-125,		119-125	"Clinical results of wound-healing stimulation with laser and experimental studies of the action mechanism"	We report on the experiences gained in 32 healed clinical cases, grouped according to etiology. In order to elucidate the action mechanism of the bioregulatory process respectively, laser stimulation of the wound-healing, the following	wound healing  laser stimulation	CLIN	GB
D28	Crural ulcers	Bihari I.	Mester A.R.	Laser Therapy 97-98, 1989, © John Wiley & Sons, Ltd.	1989	97-98	"The Biostimulative Effect of Low Level Laser Therapy of Long-standing Crural Ulcers Using Helium Neon Laser, Helium Neon Plus Infrared Lasers, And Noncoherent Light: Preliminary Report of a Randomized Double Blind Study"	Forty-five patients with crural ulcers resistant to conventional therapy were divided into three groups randomly by age (n=15). Group 1 was treated with a hand-held helium neon (HeNe) laser; group 2 with a machine-scanned combined HeNe and infrared (pulsed, 904 nm) laser; and group 3 with noncoherent unpolarized red light. All three groups received approximately equal dosage. An additional fourth group of patients (n=5) with recurrent ulcers was treated with the machine-scanned HeNe/pulsed infrared laser	LLLT  torpid ulcers noncoherent light	CLIN	GB





D38	Cerebral Palsy	Asagai Y.	Ueno R.  Miura Y. Ohshiro T.	Laser Therapy, 1995; 7: 113-118, © Laser Therapy, Ltd.	1995	113-118	"Application of Low Reactive-Level Laser Therapy (LLLT) in Patients with Cerebral Palsy of the Adult Tension Athetosis Type"	In patients with cerebral palsy of the tension athetosis type, a number of symptoms may be observed, including not only the fairly constant involuntary athetotic movements but also myotonic disorders of the motor function of all four limbs and	adult tension athetosis type  LLLT cerebral palsy 800-900 nm	CLIN	GB
D39	Corneal neovascularization	Pallikaris I.G.	Tslimbaris M.K.  Iliaki O.E. Naoumidis I.I. Georgiades A. Panagopoulos I.A.	Lasers in Surgery and Medicine 13: 197-203 (1993), ©Wiley-Liss, Inc.	1993	197-203	"Effectiveness of Corneal Neovascularization Photothrombosis Using Phthalocyanine and a Diode Laser (675 nm)"	We used chloroaluminium sulfonated phthalocyanine as a photosensitizer and a diode laser as a light source for induction of photothrombosis of corneal neovascularization. Corneal neovascularization was induced in 1 eye of each of 10 New Zealand white rabbits using intrastromal 6.0 silk sutures.	fluorescein-angiography  eyes histology occlusion photodynamic neovascularization	VIV	GB
D40	Post-mastectomy Lymphoedema	Piller N.B.	Thelander A.	Laser Therapy, 1995; 7: 163-168, ©Laser Therapy, Ltd.	1995	163-168	"Treating Chronic Post-Mastectomy Lymphoedema with Low Level Laser Therapy: A Cost Effective Strategy to Reduce Severity and Improve the Quality of Survival"	While there are some controversies and uncertainties about the effectiveness of LLLT in acute tissue disease and damage situations and some uncertainty about penetration, scatter and reflection effects of laser light, most do not apply to the progressive condition of chronic lymphoedema. In this study patients with moderate to	axillary clearance  >900 nm	CLIN	GB
D41	Late Dermal Necrosis	Rezvani M.	Nissan M.  Hopewell J.W. van den Aardweg G.J.M.J. Robbins M.E.C.	Lasers in Surgery and Medicine 12:288-293 (1992), ©Wiley-Liss, Inc.	1992	288-293	"Prevention of X-Ray-Induced Late Dermal Necrosis in the Pig by Treatment With Multi-Wavelength Light"	Low-level light from a multi-wavelength array of light sources has been used to prevent late X-ray-induced dermal necrosis in the pig. Skin fields, measuring 4x4 cm on the flank, were irradiated with a single dose of 23.4 Gv of X-rays. This X-ray dose	dermal necrosis  light pigs  animal study	VIV	GB

D41			Whitehouse E.M.						X-ray GaAIAs multi-wavelength		
D42	Analgesic Action	Tam G.		Journal of Clinical Laser Medicine & Surgery, Volume 17, number 1, 1999, 29-33, ©Mary Ann Liebert, Inc.	1999	29-33	"Low Power Laser Therapy and Analgesic Action"	The semiconductor or laser diode (GaAs, 904 nm) is the most appropriate choice in pain reduction therapy. Summary Background Data: Low-power density laser acts on the	analgesic	CLIN	GB
D42									GaAs trigger points		
D43	Cutaneous Wounds	Saperia D.	Glassberg E.	Biochemical and Biophysical Research Communications, Vol. 138, No.3, 1986, 1123-1128, ©Academic Press, Inc.	1986	1123- 1128	"Demonstration of Elevated Type I and Type III Procollagen mRNA Levels In Cutaneous Wounds Treated With Helium- Neon Laser"	To assess laser modulation of wound healing, full-thickness cutaneous wounds were produced in the back of pigs, and subjected to treatment with helium-neon laser. For comparison, some wounds were treated with non-laser energy source (a tungsten light) or left untreated as controls. Type I and	cutaneous wounds	VIV	GB
D43			Lyons R.F. Abergel R.P. Baneux P. Castel J.C. Dwyer R.M. Uitto J.						HeNe wound healing pigs animal study procollagen 600-690 nm		
D44	Laserstrahlen in der Dermatologie	Seipp W.	Haina D.	Der Deutsche Dermatologe, 26.Jahrg. (11):557-575 (1978), ©Grosse Verlag	1978	557-575	"Laserstrahlen in der Dermatologie"	Seit Entdeckung der Laserstrahlen Anfang der 60er Jahre hat die Lasertechnik auf vielen Gebieten eine so stürmische Entwicklund durchlaufen, dass sich die	dermatologie	CLIN	D
D44			Justen V. Waidelich W.						HeNe 600-690 nm		
D45	Wound healing in diabetic mouse	Yu W.	Naim J.O.	Lasers in Surgery and Medicine 20:56-63 (1997), © Wiley-Liss, Inc.	1997	56-63	"Effects of Photostimulation on Wound Healing in Diabetic mice"	Low-level laser irradiation at certain fluences and wavelengths can enhance the release of growth factors from fibroblasts and stimulate cell proliferation in vitro. We evaluated whether low-	growth factors	VIV	GB
D45			Lanzafame R.J.						biostimulation 600-690 nm		

D46	Interleukin Release	Yu H.S.	Chang K.L.  Yu C.L. Chen J.W. Chen G.S.	The Journal of Investigative Dermatology, Vol. 107, No. 4, 1996, 593-596, ©The Society for Investigative Dermatology, Inc.	1996	593-596	"Low-Energy Helium-Neon Laser Irradiation Stimulates Interleukin-1alpha and Interleukin-8 Release from Cultured Human Keratinocytes"	Clinical observations have suggested that low-energy lasers might promote wound healing. Evidence suggests that He-Ne laser irradiation induces an increase in the rate of keratinocyte migration and proliferation as compared with nonirradiated controls in vitro. This study sought to determine whether He-ne laser could induce	HeNe  cytokine wound healing interleukin keratinocytes	VIT	GB
D47, B	Blood microcirculation	Schaffer M.	Bonel H.  Sroka R. Schaffer P.M.  Busch M. Reiser M.  Dühmke E.	J. Photochem. Photobiol. B: Biol.54 (2000) 55-60, ©Elsevier Science S.A.	2000	55-60	"Effects of 780 nm diode laser irradiation on blood microcirculation: preliminary findings on time-dependent T1-weighted contrast-enhanced magnetic resonance imaging (MRI)"	Laser therapy by low light doses shows promising results in the modulation of some cell functions. Various clinical studies indicate that laser therapy is a valuable method for pain treatment and the acceleration of wound healing. However, the mechanism behind it is still not completely understood. To explore the effect of a low-power diode laser (780 nm) on normal skin tissue, time-dependent contrast enhancement	magnetic resonance imaging  MRI laser-biomodulation biomodulation microcirculation  blood flow 700-800 nm	VIV	GB
D48, B	Tumor cells	Schaffer M.	Sroka R.  Fuchs C. Schrader-Reichardt U. Schaffer P.M. Busch M. Dühmke E.	Journal of Photochemistry and Photobiology B: Biology 40 (1997) 253-257, ©Elsevier Science S.A.	1997	253-257	"Biomodulative effects induced by 805 nm laser light irradiation of normal and tumor cells"	The influence of light emitted from a diode laser ventered at 805 nm was investigated on murine skeletal myotubes (C2), normal urothelial cells (HCV29), human squamous carcinoma cells	biomodulative effects  biomodulation laser light irradiation normal cells tumor cells 800-900 nm	VIT	GB





D52	Herpes simplex infection	Schindl A.	Neumann R.	The Journal of Investigative Dermatology 113:221-223, 1999© The Society for Investigative Dermatology, Inc.	1999	221-223	"Low-Intensity Laser Therapy is an Effective Treatment for Recurrent Herpes Simplex Infection. Results from a Randomized Double-Blind Placebo-Controlled Study"	Recurrent infection with herpes simplex virus is a common disease. Recently, alternative therapies have been introduced. Among those, low-intensity laser therapy mainly used for the acceleration of wound healing and in pain therapy has previously been shown to be of benefit in herpes zoster infections. In this study we evaluated the influence of low-	biostimulation	DB	GB
D52									immunology 600-690 nm	CLIN	
D53	Laser in der medizinischen Praxis	Schindl L.		Natur-Heilkunde 10. Jahrgang, 3, 22-26, 1990	1990	22-26	"Low-Power-Laser in der medizinischen Praxis"	Der Praktische Arzt oder Facharzt, der sich näher mit Lasertherapie beschäftigen möchte, sieht sich sowohl einem	physikalische therapie		D
D53									HeNe infrarot		
D54	Microcirculation	Maegawa Y.	Itoh T.	Lasers in Surgery and Medicine 27:427-437, 2000© Wiley-Liss, Inc.	2000	427-437	"Effects of Near-Infrared Low-Level Laser Irradiation on Microcirculation"	Recently, there has been an increase in the clinical application of low-level laser irradiation in various fields. The present study was conducted to	cytosolic calcium concentration	VIV	GB
D54			Hosokawa T. Yaegashi K. Nishi M.						nitric oxide vasodilation vascular smooth muscle	VIT	
D55	Mucosa of the Equine Upper Airway	Gomez-Villamandos R.J.	Santisteban Valenzuela J.M.	Lasers in Surgery and Medicine 16:184-188, 1995 © Wiley-Liss Inc.	1995	184-188	"He-Ne Laser Therapy by Fibroendoscopy in the Mucosa of the Equine Upper Airway"	A study was made of the effects of low-level laser irradiation on the cicatrization of superficial wounds in the pharyngeal mucosa of the horse. Duplicate pharyngeal mucosal ulcers were	HeNe	VIV	GB
D55			Ruiz Calatrava I. Gomez-Villamandos J.C. Avila Jurado I.						fibroendoscope mucosa  cicatrization horse animal study		
D56	Flap survival	Kami T.	Yoshimura Y.	Annals of Plastic Surgery Vol 14 No 3 1985	1985	278-283	"Effects of Low-Power Diode Lasers on Flap Survival"	We investigated the effect of low-power laser irradiation on the survival of experimental skin flaps in rats. A gallium-aluminium-arsenide diode laser that was	diode laser	VIV	GB
D56			Nakajima T Ohshiro T. Fujino T.						skin flaps rats animal study		





D64	Strawberry Haemangioma in the Infant	Ohshiro T.	Chen I.	Laser Therapy Vol.4, No.3, 127-132, 1992 © John Wiley & Sons, Ltd.	1992	127-132	"Low reactive-level 830 nm diode laser therapy (LLLT) sucessfully accelerates regression of strawberry haemangioma in the infant: case reports"	The strawberry haemangioma is a disturbing lesion, especially for the parents of the affected infant. Surgical intervention is unacceptable in most cases, owing to the possibility of severe scarring. Reports have appeared on successful application of laser surgery for smaller lesions, but the possibility of scarring still exists. Because of the success of	strawberry haemangioma  strawberry mark  photobioactivation diode laser	CLIN	GB
D65	Cicatrical Vitiligo	Sasaki K.	Ohshiro T.	Laser Therapy Vol.1, No3., 141-146, 1989 © John Wiley & Sons, Ltd.	1989	141-146	"Role of low reactive-level laser therapy (LLLT) in the treatment of acquired and cicatrical vitiligo"	Vitiligo, characterized by a partial or complete loss of melanin pigmentation, is very difficult to treat successfully. Two classifications of the disease are offered. Acquired idiopathic vitiligo, occurring spontaneously,	diode laser  melanocytes vitiligo bioactivation	CLIN	GB
D66	Herpes Zoster	Matsumura C.	Ishikawa F.  Imai M.  Kemmonsu O.	Laser Therapy Vol.5, No.1, 43-46, 1993 © John Wiley & Sons, Ltd.	1993	43-64	"Useful effect of application of helium-neon LLLT on an early stage case of herpes zoster: a case report"	Low reactive-level laser therapy has been reported as effective in treating the intractable pain of chronic post herpetic neuralgia, but no reports have appeared on the use of LLLT on the acute phase of Herpes zoster. A case	herpes zoster virus  post herpetic neuralgia sympathetic block  adjunctive LLLT  HeNe scanning	CLIN	GB
D67	Open Skin Wounds	Lee P.	Kim K.  Kim K.	Laser Therapy Vol.5, No.2, 59-64, 1993 © John Wiley & Sons, Ltd.	1993	59-64	"Effects of low incident energy levels of infrared laser irradiation on healing of infected open skin wounds in rats"	It is suggested that S. mutans can be stimulated by LLLT in vivo, and similar modulation could potentially occur in the other bacteria exposed to LLLT. In addition the acceleration of healing in the infected lesion following GaAs LLLT indicates	wound healing  gallium arsenide  infrared	VIV	GB

D67									bacterial infection		
D68	Wound Healing	Al-Watban F.A.H.	Zhang X-Y.	Laser Therapy Vol.7, No.1, 011-018, 1995 © Laser Therapy, Ltd.	1995	11-18	"Stimulative and inhibitory effects of low incident levels of argon laser energy on wound healing"	A study on the stimulative and inhibitory effects of low incident power densities of argon laser energy on wound healing in rats was undertaken. Our results were calculated ay 80% of wound	argon laser  dosimetry inhibitory effect  stimulative effect  wound healing	VIV	GB
D68											
D69	Wunden Mamillen	Bednar B.	Unterberger E.	Laktation und Stillen 2/2002	2002		"Lasertherapie bei wunden Mamillen"	Bereits seit Jahren wird der Low- Level-Laser- oder Soft-Laser zur Beschleunigung der Wundheilung in der	wunden mamillen	CLIN	D
D70, B	Burn Wounds	Sasaki K.	Ohshiro T.  Hoshino T.	Laser Therapy Vol.9, No.2, 59-66, 1997 © LT Publishers, U.K., Ltd.	1997	59-66	"A preliminary double blind controlled study on free amino acid analysis in burn wounds in the mouse following 830 nm diode laser therapy"	A double-blind controlled study is presented on the amino acid analysis of levels of a selected group of 26 free amino acids in CO2 laser generated standardized burn wounds on the bilateral dorsum in the ddy mouse model. Four groups of ddy white mice, 6 animals per group. were anaesthetized with	free amino acids  wound healing burn wounds diode laser	DB  VIV	GB
D70, B											
D71, B	Infected Wounds	Kim K-S.	Lee P-Y.  Lee J-H. Kim Y-K.	Laser Therapy Vol.10, No.1, 17-24, 1998 © LT Publishers, U.K., Ltd.	1998	17-24	"Effects of different modes of low level laser irradiation on the healing of experimentally infected wounds"	Many studies, using low level laser irradiation, have been performed to investigate the influence of laser irradiation on the healing process of wounds or lesions. It has been proposed that the low incident levels of	wound healing  staphylococcus aureus GaAs diode laser pulse type wound bed irradiation peripheral irradiation	VIV	GB
D71, B											
D72	Skin Ulcers	Kubota J.		Laser Therapy Vol.10, No.3, 123-128, 1998 © LT Publishers, U.K., Ltd.	1998	123-128	"Treatment of skin ulcers with 830 nm GaAlAs diode laser therapy"	Persistent skin ulcers are still a major problem for the plastic and reconstructive surgeon. These ulcers of various aetiologies are often resistant to conventional	persistent ulcers	CLIN	GB

									failing flaps graft necrosis circulatory failure  macrophage angiogenesis diode laser		
D72											
D73	Nail Disorders, Chronic Paronychia and Ingrown Nail	Shoji A.	Inoue A.	Laser Therapy Vol.10, No.3, 133-138, 1998 © LT Publishers, U.K., Ltd.	1998	133-138	"Treatment of nail disorders with LLLT (2) chronic paronychia and ingrown nail"	A diode laser system was used for the treatment of 17 patients with nail disorders: nine patients with chronic paronychia and eight patients with ingrown nail. We treated stage I of ingrown	diode laser	CLIN	GB
D73									chronic paronychia ingrown nail onychocryptosis		
D74	Wound Healing	Al-Watban F.A.H.	Zhang X.Y.	Laser Therapy Vol.11, No.1, 6-10, 1999	1999	6-10	"The acceleration of wound healing is not attributed to laser skin transmission"	A study was carried out to observe the acceleration of wound healing using different wavelengths of laser, and to assess the role played by the amount of laser transmitted bt	wound healing	VIV	GB
D74									biostimulation various wavelengths		
D75	Venous Stasis Ulcers	Lichtenstein D.	Morag B.	Laser Therapy Vol.11 No.2, 71-78, 1999	1999	71-78	"Low level laser therapy in ambulatory patients with venous stasis ulcers"	The effectiveness of laser therapy in accelerating wound healing has been clinically well documented. We used to devices: one, a He-Ne laser with a wavelength of 632.8 nm and power output of 8 mW; the other,	venous ulcer	CLIN	GB
D75									wound healing leg ulcer		
D76	Flap Survival, Microcirculation	Kubota J.	Ohshiro T.	Laser Therapy, 8:241-246, 1996 © LT Publishers, Ltd.	1996	241-246	"The Effects of Dioed Laser LLLT on Flap Survival: Measurement of Flap Microcirculation with Laser Speckle Flowmetry"	A laser speckle flowmetry technique has been developed to enable visualization of the distribution of skin blood flow and has been used to measure the microcirculation in various angiopathies as well as to monitor blood flow changes and other haemodynamics in skin	diode laser	VIV	GB
D76									flap survival microcirculation  laser speckle flowmetry random caudal flap flap take GaAIAs		



D81	Primary Raynaud' s Phenomenon	Hirschl M.	Katzenschlager R.  Ammer K. Melnizky P.  Rathkolb O.  Kundi M.	VASA 31:91-94, 2002 © Verlag Hans Huber Bern	2002	91-94	"Double-blind, randomized, placebo controlled low level laser therapy study in patients with primary Raynaud' s phenomenon"	No causal treatment of primary Raynaud' s phenomenon is available due to its unclear aetiology. Low level laser therapy is applied in a multitude of medical conditions often without sufficient evidence of efficacy and established mechanisms. To asses the effect of this therapy in patients with primary Raynaud' s	primary Raynaud' s phenomenon  placebo vasospastic attacks infrared thermography diode array	DB	GB
D82	Scars and Photodamaged Skin	Kontoes P.	Vlachos S.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 101-104, 2002 © Monduzzi Editore S.p.A.	2002	101-104	"IPL Treatment of Scars and Photodamaged Skin: A LLLT Aspect?"	Lasers and intense pulsed light sources have been extensively used in non-ablative procedures: Removal of pigmented and vascular lesions, hair reduction, photorejuvenation. IPLS, through their wide spectrum of	scars  photodamaged skin intense pulsed light	RE	GB
D83	Pediatric Skin Diseases	Ailioaie C.	Ailioaie L.M.  Chiran D.A. Ailioaie R.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 121-125, 2002 © Monduzzi Editore S.p.A.	2002	121-125	"Healing Induced by LLLT in Pediatric Skin Diseases"	The goal of the present study was to investigate the effects of Low Level Laser Therapy in children with: Nonbullous Impetigo, Folliculitis, Perianal Dermatitis, and Diaper Dermatitis superinfected with Candida,	pediatric  skin diseases GaAIAs NK cells	CLIN	GB
Dd1	Aurikulomedizin und zahnheilkunde	Mastalier O.		The International Journal of Auricular Medicine 1/96, 17-23, 1996	1996	17-23	"Aurikulomedizin und Ganzheitliche Zahnheilkunde"	Die Aurikulomedizin bietet in der ganzheitlichen Zahnmedizin eine nahezu universelle komplementaere Diagnostik und	holistic dentistry  auricular medicine	RE	D
Dd2	Overview of LLLT, Research Abstracts,	Parker S.P.A.	Turnér J.  Ross G.	Wavelengths, Winter 2001 Vol 9 Issue 1, 13- 28, 2001	2001	13-28	"Featured Wavelegth: LLLT"	Overview of LLLT, Research Abstracts, Summary of LLL Investigations, Overview of LLLT,	overview  research abstract  summary on investigations	RE	GB



Dd3	Dentistry	Tunér J.	Christensen P.H.	Dental Products Report Europe Nov/Dec 2000, 12-14	2000	12-14	"Low-Level Lasers new possibilities in dentistry"	Low-level laser technology offers clinicians the opportunity to treat patients with herpes, mucositis, post-operative pain, paresthesia, sinusitis and TMD., Dentistry	herpes  mucositis post-operative pain paresthesia sinusitis TMD	RE	GB
Dd3											
Dd4	Antro-oral Communication	Grzesiak-Janak G.	Janak A.	Journal of Clinical Laser Medicine & Surgery Vol 19, No 4, 181-184, 2001© Mary Ann Liebert, Inc.	2001	181-184	"Conservative Closure of Antro-oral Communication Stimulated with Laser Light"	To evaluate application of laser biostimulation in the treatment of antro-oral communications. Sixty-one patients between the ages of 14 and 58 were subjected to biostimulation with laser light.	antro-oral communication  tooth extract infrared 830 nm	CLIN	GB
Dd4											
Dd5	Intra- und postoperativen Phase	Semmler R.		ZMK 9 Jahrgang, Nr. 8, Nov/Dez 1993 © Spitta Verlag	1993		"Die Low-Level-Laser-Therapie in der intra- und postoperativen Phase"	Nach richtiger und korrekter Diagnose, Indikation und Insertion ist für eine erfolgreiche Implantation die ungestörte Wundheilung von	implantation  wundheilung infrarot dioden laser intraoperativ postoperativ	CLIN	D
Dd5											
Dd6	Dental and Oral Surgery	Nagasawa A.	Negishi A.	LLLT Original Articles, 119-122, 1991© John Wiley & Sons, Ltd	1991	119-122	"Clinical Applications of LLLT In Dental And Oral Surgery In The Urawa Clinic"	The Urawa Clinic is a dental office established in 1971 in the city of Urawa, Saitama prefecture, near Tokyo. Recently, the medical application of lasers has been developing actively, but it is not	diode laser  HeNe argon laser bone regeneration	CLIN	GB
Dd6			Kato K.								
Dd7	Haut und Orale Schleimhautgewebe	Schenk P.	Porteder H.	Laryng. Rhinol. Otol. 65, 146-150, 1986 © Georg Thieme Verlag	1986	146-150	"Helium-Neon-Laser-Effekt auf Haut und orale Schleimhautgewebe"	The biological effects of the helium-neon laser on skin and oral mucosa were examined for the first time electron microscopically. Canine	mucosa  HeNe canine epidermis  gingiva sublingual	VIV	D
Dd7			Zetner K.								

Dd8	Die Low-Level-Lasertherapie	Wagner B.		ZMK 6-7/97, 2-5, 1997 © Spitta Verlag	1997	2-5	"Die Low-Level-Lasertherapie"	Während ausländische Studien die Wirksamkeit des Low-Level-Lasers bestätigen, stehen deutsche Zahnärzte dem Einsatz	dentistry  infrared schmerz HeNe	RE	D
Dd8											
Dd9	Tandläkaren	Tunér J.					"Laser hos tandläkaren"	Borren går. Det gör inte ont - tack och lov för bedövningen! Men	dentistry	RE	S
Dd9									overview		
Dd10	Periodontal Pockets	Moritz A.	Schoop U.	Lasers in Surgery and Medicine 22:302-311, 1998 © Wiley-Liss, Inc.	1998	302-311	"Treatment of Periodontal Pockets With A Diode Laser"	The aim of his study is to examine the long-term effect of diode laser therapy on periodontal pocket with regard to	root	CLIN	GB
Dd10			Goharkhay K. Schauer P. Doertbudak O. Wernisch J.  Sperr W.						scaling microbiology diode laser periodontal pockets bacterial count		
Dd11	Zahnmedizin	Graumann A.K.		Zahn Prax 2, 24-29, 1999	1999	24-29	"Akupunktur in der Zahnmedizin"	Das Interesse an ergänzenden Therapiemassnahmen nimmt auch unter Zahnärzten mehr zu.	zahnmedizin	RE	D
Dd11									analgesie akupunktur		
Dd12	Fixed Prosthodontic Pain Control	Wafa F.	El-Matar Sh.	LLLT Original Articles, 83-87, 1990 © John Wiley & Sons, Ltd.			"A Clinical Study of LLLT In Fixed Prosthodontic Pain Control After Tooth Preparation To Receive A Crown"	The analgesic effect of laser therapy was evaluated on a group of 60 patients, who had teeth prepared to receive porcelain-fused to gold crowns. Clinical observation was performed regarding remission of pain in relation to the number	analgesic effect	CLIN	GB
Dd12			Al-Omar S.						diode laser infrared fixed prosthodontic dentistry		
Dd13	Verborgene Zahnstörfelder	Strittmatter B.		Akupunktur/Aurikulomediz in 2/1997, 3-11			"Verborgene Zahnstörfelder - häufiger Grund für "unerklärliche" Therapieresistenz in der Akupunktur"	Besonders hartnäckige Zahnstörfelder tendieren dazu, sich "abzukapseln" bzw. Zu "isolieren". Sie sind mittels der üblichen Störfelddiagnostik über die fünf Störfeldhinweispunkte nach Bahr nicht oder nur schwer zu erfassen und unterhalten	akupunktur	RE	D
Dd13									diode laser zahnstörfelder		

Dd14, B	Human gingival fibroblasts proliferation	Almeida-Lopes L.	Rigau J.  Zangaro R.A. Guidugli-Neto J.  Marques Jaeger M.M.	Lasers in Surgery and Medicine 29:179-184, 2001 © Wiley-Liss, Inc.	2001	179-184	"Comparison of the Low Level Laser Therapy Effects on Cultured Human Gingival Fibroblasts Proliferation Using Different Irradiance and Same Fluence"	The low level laser therapy has been used in dentistry to improve wound healing. In order to analyze the effect of LLLT on the in vitro proliferation of gingival fibroblasts we developed a primary culture of human gingival fibroblasts. We found that cells cultured in nutritional deficit condition grown in medium supplemented by only	cell culture  diode laser human fibroblasts  wound healing  proliferation	VIT	GB
Dd15	Oral Mucositis	Migliorati C.	Massumoto C.  Eduardo F.P. Muller K.P.  Carrieri T. Haypek P. Eduardo C.P.	Science, Vol 1, No2, 2001, 97-100	2001	97-100	"Low-energy Laser Therapy in Oral Mucositis"	The use of high-dose chemotherapy as part of the preparative regimen for stem cell	bone marrow transplantation  oral mucositis high dose chemotherapy	CLIN	GB
Dd16	Prevention of radiation-induced mucositis	Bensadoun R.J.	Franquin J.C.  Ciais G. Darcourt V.  Schubert M.M. Viot M. Dejou J. Tardieu C.	Support Care Cancer 7, 1999 © Springer-Verlag	1999	244-252	"Low-energy He/Ne laser in the prevention of radiation-induced mucositis"	Use of low-energy helium-neon laser appears to be a simple atraumatic technique for the prevention and treatment of mucositis of various origins. Preliminary findings, and	mucositis  radiotherapy head and neck cancer HeNe	CLIN	GB
Dd17, B	Improvement of macromolecular clearance via lymph flow	Shimotoyodome A.	Okajima M.  Kobayashi H.  Tokimitsu I.	Lasers in Surgery and Medicine 29:442-447, © 2001	2001	442-447	"Improvement of Macromolecular Clearance Via Lymph Flow in Hamster Gingiva by Low-Power Carbon Dioxide Laser-Irradiation"	Although therapeutic effects of low-power laser-irradiation on periodontal disease have been reported, little is known about the biological effects of laser-irradiation in the gingiva. Recently we reported that topical warming stimulated macromolecular clearance via	albumin clearance  periodontal disease submandibular lymph nodes	VIV, B	GB

Dd17, B			Fujimura A.						animal study CO2 laser		
Dd18	Mucositis	Bensadoun R.-J.	Magné N.	Eur Arch Otorhinolaryngol 258:481-487, 2001 © Springer-Verlag	2001	481-487	"Chemotherapy- and radiotherapy-induced mucositis in head and neck cancer patients: new trends in pathophysiology, prevention and treatment"	Mucositis is the intensity-limiting toxicity in the management of locally advanced non-resectable head and neck cancer with radiotherapy and chemotherapy. New radiation modalities as well as combined modality regimens in this situation induce higher rates of acute toxicity. Hyperfractionation, for example.	mucositis  stomatitis chemotherapy radiotherapy head and neck cancer	RE	GB
Dd18			Marcy P.-Y. Demard F.								
Dd19	Zahnmedizin	Hopp M.		Laser Journal 4/2001, 6-15,	2001	6-15	"Entdecke die Möglichkeiten... Softlaseranwendung am Patienten"	Softlaseranwendungen in Europa sind erst im Wachsen begriffen. Ausserdem ist erkennbar, dass die Zahnmedizin bei dieser Form der Therapie, wie in anderen	zahnmedizin  photobiostimulati on	RE	D
Dd19											
Dd20	Dentary hypersensitivity	Brugnera A. Jr.	Cruz F.M.	SPIE Conference on Lasers in Dentistry V, Jan 1999, SPIE Vol. 3593	1999	66-68	"Clinical results evaluation of dentary hypersensitivity patients treated with lasertherapy"	The purpose of this investigation was to show the percentage of cured patients treated with low level laser therapy clinically diagnosed dentary hypersensitivity. The authors report on this investigation more	dentary hypersensitivity  HeNe ArGaAl	CLIN	GB
Dd20			Zanin F. Pecora J.D.								
Dd21	Gingival fibroblasts	Lopes A.L.	Jaeger M.M.	SPIE Vol.3248 1998			"Action of low power laser irradiation on the proliferation of human gingival fibroblasts in vitro"	The low power laser has been used in dental treatments aiming to improve tissue healing. An in vitro study was performed to analyse the laser influence on gingival fibroblast. A human gingival fibroblast culture was	fibroblasts  gingival fibroblasts infrared	VIT	GB
Dd21			Brugnera A.Jr. Rigau J.								
Dd22	Effets secondaires chimio et radioinduits dan l' oropharynx	Ciais G.		3me Journées Monégasques de Cancerologie, 1998	1998	83-85	"Prevention et traitement des effets secondaires chimio et radioinduits dans l' oropharynx par lase froid He-Ne"		HeNe	RE	F

Dd22									effets chimio et radioinduits oropharynx cavite buccale		
Dd23	Prevention des mucites liees	Franquin J-C.	Ciais G.	Actualités Odonto-Stomatologiques n 186, 1994	1994	255-267	"La laserthérapie dans la prévention des mucites liées à la chimiothérapie et à la radiothérapie anticancéreuses"	L' apparition frequente de mucites au niveau de la cavite buccale et des muqueuses aero-digestives superieures est une pathologie iatrogene algigue et limitante liee a certains protocoles de chimiotherapie et de radiotherapie anticancereuses.	5-fluorouracile  HeNe mucites radiotherapie	RE	F
Dd23											
Dd24	Fysiotherpaie en de tandheelkunde	van Breugel.	de Kok C.R.	Janus Jongbloed Research Centrum, Research Laboratorium Neurologie, Rijksuniversitet Utrecht, 1992	1992	1-90	"Metingen aan lichtbundels van laagvermogen diode lasers voor de fysiotherapie en de tandheelkunde"	In dir rapport wordt verslag gedaan va een vergelijkend onderzoek ten aanzien van de lichtbundels van therapeutische (diode) lasers zoals die gebruikt worden in defysiotherapie en de tandheelkunde. Tevens zijn een	diode laser  fysiotherapie tandheilkunde fundamentele begrippen	RE	NL
Dd24			Hilvers A.H. Bär P.R. Erich W.B.M.								
Dd25	Diagnostic tool in Dentistry	Kutvölgyi I.		Laser Therapy Vol.10, No.2, 79-82, 1998 © LT Publishers, U.K., Ltd.	1998	79-82	"Low level laser therapy as a diagnostic tool in dentistry"	The situation sometimes exists ehre a tooth causes excessive pain to the patient, but the diagnosis cannot be made by the dentist with the traditional methods. In these instances,	diode laser  oral clinical diagnosis periodontitis hyperaemia	CLIN	GB
Dd25											
Dd26	Oral Bacteria	O' Neill J.F.	Hope C.K.	Lasers in Surgery and Medicine 31 :86-90, 2002 © Wiley-Liss, Inc.	2002	86-90	"Oral Bacteria in Multi-Species Biofilms Can Be Killed by Red Light in the Presence of Toluidine Blue"	Oral bacteria can be killed by light in the presence of a suitable photosensitizer, and this could be used in the treatment of oral infections. In these diseases, however, bacteria are present as biofilms, which are refractive to	lethal photosensitization  biofilms dental plaque caries periodontitis toluidine blue HeNe	VIT	GB
Dd26			Wilson M.								

Dd27	Chronic Periodontitis, Lethal Photosensitization	Wilson M.	Sarkar S.  Bulman J.S.	Lasers in Medical Science 8:297-303 1993 © Bailliere Tindall	1993	297-303	"Effect of blood on lethal photosensitization of bacteria in Subgingival Plaque from Patients with Chronic Periodontitis"	The purpose of this study was to determine whether bacteria un subgingival plaque samples from patients with chronic periodontitis could be sensitized to killing by low-power laser light in the presence of blood. Toluidine blue 0 was added to the plaque samples which were	photosensitization  subgingival plaque chronic periodontitis toluidine blue HeNe	VIT	GB
Dd27											
Dd28,B	Survival Rate of Gingival Fibroblast Cell Cultures	Kreisler M.	Daubländer M.  Willershausen-Zönnchen B. d' Hoedt B.	Lasers in Surgery and Medicine 28:445-450, 2001 © Wiley-Liss, Inc.	2001	445-450	"Effect of Diode Laser Irradiation on the Survival Rate of Gingival Fibroblast Cell Cultures"	The present study is part of a basic research program investigating the cellular effects of the GaAlAs-diode laser with a wavelength of 810 nm on human periodontal tissues. The aim of	diode laser  periodontology  human gingival fibroblasts  cell culture cell death	VIT	GB
Dd28,B											
Dd29	Tandvåren	Tunér J.		Tandläkartidningen årg 95 nr 2, 2003	2003		"Terapilaser inom tandvåren -historik och litteratur"	Laserteknik har fört med sig många nya möjligheter inom odontologin, både inom klinik och inom diagnostik. De kirurgiska lasrarna används	odontologin  indikationer	RE	S
Dd29											
Dd30	Periimplantitis-Behandling	Bach G.		Laser Journal 3, 2002	2002		"Laserunterstützte Periimplantitis-Behandling und Weichteilmanagement an einem strategisch wichtigen Oberkieferimplantat"	Dank verbesserter Operationstechnik, feinerem chirurgischen Instrumentarium und nicht zuletzt modifizierter Implantatoberflächen sind enorale Implantationen sicher und zu einem Standardtherapeutikum geworden. Frühe Komplikationen. wie sie in der	implant	CLIN	D
Dd30									diode laser		

Dd31	Weisheitszahnkeimen und Weisheitszähnen	Bruntsch B.		Dissertation zur Freien Universität Berlin, 1990	1990		"Untersuchung zum Therapieeffekt von Soft-Laserstrahlen nach operativer Entfernung von Weisheitszahnkeimen und Weisheitszähnen"		dissertation  weisheitszahkeimen weisheitszähnen	CLIN	D
Dd31									infrarot		
Dd32	Present Situation of the Dental World regarding the Use of Laser Therapy	Almeida-Lopes L.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 43-48, 2002 © Monduzzi Editore S.p.A.	2002	43-48	"Present Situation of the Dental World Regarding to the Use of Laser Therapy (Brazil)"	The theme of our presentation is to introduce the current status of the Laser Therapy in Brazil. We' ve split the presentation into three blocks, being that on the first one we define the status of	clinical applications	RE	GB
Dd32									review		
Dd33,P	Pain Control in Dentistry	Yoshida I.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 117-120, 2002 © Monduzzi Editore S.p.A.	2002	117-120	"Pain Control in Dentistry by LLLT. Focusing on the Application of Oriental Medicine"	How much is use frequency in dentistry of LLLT worldwide? In Japan there was a boom about 15 years ago which has faded little. However, dental surgery still has a painful of needles, bone cutting. making incisions. and	pain	RE	GB
Dd33,P									oriental medicine acupuncture		
Dd34	Dental Hypersensitivity	Brugnera Jr. A.	Garrini A.E.	Laser Therapy Vol. 12, 16-21, 2000	2000	16-21	"Laser Therapy in the Treatment of Dental Hypersensitivity -A Histological Study and Clinical Application"	Dentinal hypersensitivity has been studied for several years. It is reported as a strikingly painful condition that originates from the exposure of dentinal tubuli when the thickness of the enamel or cement is significantly reduced. Usually the exposed area is	dental hypersensitivity	CLIN	GB
Dd34			Pinheiro A. Souza Campos D.H. Donamaria E. Magalhaes F.						pain diode laser  odontoblasts dentine tubuli various wavelengths		

ENT1	Innenohrerkrankungen	Wilden L.	Dindinger D.	WALT, Jerusalem, 1996	1996	1-3	"Therapie von chronisch komplexen Innenohrerkrankungen mit Low-Level-Lasertherapie"	In den letzten Jahren ist eine deutlich Zunahme der Innenohrerkrankungen zu verzeichnen. Das akute klinische Bild der Innenohrerkrankungen besteht aus Druck im Ohr, plötzlichem Hörverlust, Tinnitus	inner ear disease	CLIN	D
ENT1									HeNe		
ENT2	Diseases of the inner ear	Wilden L.	Dindinger D.	Laser Therapy 8:209-312, 1996© LT Publishers, U.K., Ltd.	1996	209-312	"Treatment of chronic diseases of the inner ear with low level laser therapy (LLL): Pilot project"	139 patients who presented in a 22 month period were treated with low-reactive level laser therapy LLLT using combined HeNe and infrared diode lasers (632.8nm, 20mW and 830nm 100mW, respectively) for a	inner ear disease	CLIN	GB
ENT2									HeNe		
ENT3	Hörkapazität	Wilden L.	Ellerbrock D.	1999© Laser Evolution GmbH	1999	1	"Verbesserung der Hörkapazität durch Low-Level-Laser-Licht"	Der Energietransfer erfolgte über 3 Laserdioden mit einer Wellenlänge von 830nm und 3 Dioden von 635nm via meatus	audiometry	CLIN	D
ENT3									600-690 nm 800-900 nm tinnitus		
ENT4	Tinnitus	Olivier J.	Plath P.	Laser Therapy, 5:137-139, 1993© John Wiley & Sons, Ltd.	1993	137-139	"Combined low power laser therapy and extracts of Ginkgo Biloba in a blind trial of treatment for tinnitus"	Tinnitus is an annoying and often debilitating condition of neuro-otologic origin but of uncertain aetiology. Many treatment methods have been tried, but to date none has been consistently successful. The present preliminary study presents a	biloba extract	B	GB
ENT4									ginkgo extract tinnitus	CLIN	
ENT5	Hörkapazität	Wilden L.	Ellerbrock D.	Lasermedizin 14: 129-138, 1998/99© Urban & Fischer Verlag	1998/99	129-138	"Verbesserung der Hörkapazität durch Low-Level-Laser-Licht"	If LLLL is transmitted to the inner ear in sufficiently high dosages, it is possible to obtain and document medicinally	audiometry	CLIN	D
ENT5									inner ear cellular regeneration		
ENT6	Responses Evoked in Trigeminal Caudal Neurons	Wakabayashi H.	Hamba M.  Matsumoto K.	Lasers in Surgery and Medicine 13:605-610, 1993 © Wiley-Liss, Inc.	1993	605-610	"Effect of Irradiation by Semiconductor Laser on Responses Evoked in Trigeminal Caudal Neurons by Tooth Pulp Stimulation"	The effect of irradiation with a gallium-aluminium-arsenide semiconductor laser on responses evoked in trigeminal subnucleus caudal neurons by tooth pulp stimulation was investigated electrophysiologically in Wistar rats anesthetized with urethane plus alpha-chloralose. The pulp of	A-fiber afferents  C-fiber afferents	VIV	GB



ENT6			Tachibana H.						suppressive effect  infrared diode laser semiconductor laser		
ENT7	Tinnitus	Shiomi Y.	Takahashi H.	Auris Nasus Larynx 24, 39-42, 1997 © Elsevier Science Ireland Ltd.	1997	39-42	"Efficacy of transmeatal low power laser irradiation on tinnitus: a preliminary report"	Thirty-eight patients suffering from tinnitus resistant to several medical therapies for more than 6 months were treated by low power laser irradiation. A 40 mW laser with a wavelength of 830 nm was irradiated via their	tinnitus  transmeatal diode laser 40 mW 830 nm	CLIN	GB
ENT7			Honjo I. Kojima H. Naito Y. Fujiki N.								
ENT8	Tinnitus	Olivier J.	Plath P.		1992		"Low-Power-Laser und Ginkgo-Extrakt-Kombinationstherapie bei Tinnitus des Innenohres"	Seit Ende der 70er Jahre hat sich die Therapie mit Lasern niedriger Energie zunächst zur Behandlung von Wundheilungsstörungen, später in Kombination mit Gabe eines	tinnitus  ginkgo-extract combination therapy	B  CLIN	D
ENT8											
ENT9	Allergic Rhinitis	Otsuka H.	Kemmotsu O.	Laser Therapy Vol.4, No.3, 117-120, 1992 © John Wiley & Sons, Ltd.	1992	117-120	"The combination of low reactive-level laser therapy (LLLT) and stellate ganglion block for the treatment of allergic rhinitis"	We have applied unilateral stellate ganglion block and low reactive-level laser therapy on the contralateral stellate ganglion as a treatment for allergic rhinitis. At the early stage of treatment, a remarkable improvement in the patient's condition was recognized. It is	allergic rhinitis  stellate ganglion semiconductor laser	CLIN	GB
ENT9			Imai M. Kaseno S.								
ENT 10	Allergic Rhinitis	Takeyoshi S.	Takiyama R.	Laser Therapy Vol.8, No.2, 159-164, 1996 © LT Publishers. Ltd	1996	159-164	"Low reactive-level infrared diode laser irradiation of the area over the stellate ganglion, and stellate ganglion block in treatment of allergic rhinitis: a preliminary comparative study"	In the period of approximately 11 years between 1985 and 1995 64 patients suffering from allergic rhinitis visited the Department of Anesthesia, Matsuyama Red Cross Hospital for treatment. From these 64 patients, 32 clinical cases were studied for the case history, type and severity of the AR, and the efficacy of stellate ganglion block and laser irradiation over the stellate ganglion was evaluated.	allergic rhinitis	CLIN	GB

ENT 10			Tsuno S.  Saeki N. Hidaka S. Maekawa T.						stellate ganglion block  infrared diode laser GaAIs		
ENT11	Tinnitus	Tunér J.	Bjorne A.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 167-176, 2002 © Monduzzi Editore S.p.A.	2002	167-176	"What is the Role of the Laser Dentist in the Treatment of Tinnitus?"		tinnitus       muscular tension  inner ear		GB
ENT11									vaginitis	CLIN	GB
G1	Vaginitis	Passeniouk A.M	Mikhailov V.A.	Proceedings of SPIE Vol 4166, 2000			"Application of the low level laser therapy for the treatment of vaginitis"	Vaginitis is the most common female infectious disease. Female suffering from this disorder are annually increasing in number. There are a lot of	chlorhexidine infrared		
G1											
Gm1	Laser-licht	Kramer F.		h&j, 3, 9-12, 1999	1999	9-12	"Laser-licht...faszinierende elektromagnetische Wellen"	Der Laser ist heute in der modernen Medizin nicht mehr wegzudenken. Ob HLL für die Chirurgie oder der LLL für die sanfte Medizin,	akupunktur     neuraltherapie triggerpunkttechnik		D
Gm1											
Gm2	Lasers in Medizin und Technik	Schindl L.		Gamed, 3, 5-6, 1994	1994	5-6	"Laser. Kurze Übersicht über den Einsatz des Lasers in Medizin und Technik"	Kurze Übersicht über den Einsatz des Lasers in Medizin und Technik von L. Schindl.	übersicht		D
Gm3	Arthus Phenomenon	Schindl L.	Baehr R.V.	Journal of Clinical Laser Medicine & Surgery, Volume 12, Number 1, 31-33, 1994© Mary Ann Liebert, Inc.	1994	31-33	"Influence of Low-Incident-Energy Laser Irradiation on the Arthus Phenomenon Induced on the Rabbit' s Cornea: A Controlled Study"	This study investigated the effects of low-power laser irradiation on the rabbit cornea. Making use of the immune reaction common in rabbits, the Arthus phenomenon, we injected all rabbits with complete Freund' s adjuvant containing inactivated myobacterium twice	arthus phenomenon       cornea rabbits animal study HeNe	VIV	GB
Gm3											
Gm4	Lasertherapie	Schindl L.		Lasertherapie, 12, 20-22, 1988	1988	20-22	"Lasertherapie mit Low-Power-Laser"	Eine neue, erfolgreiche Behandlungsmethode der Physikalischen Medizin Laser =	lasertherapie		D





Gm16	Variation of Erythrocytic and Leukocytic Indices of Human Blood	Siposan D.G.	Lukacs A.	Journal of Clinical Laser Medicine & Surgery Vol 19, No ", 89-103, 2001 © Mary Ann Liebert, Inc.	2001	89-103	"Relative Variation to Received Dose of Some Erythrocytic and Leukocytic Indices of Human Blood as a Result of Low-Level Laser Radiation: An in Vitro Study"	This study investigated the in vitro effects of low-level laser irradiation on selected rheologic constants of the human blood. The variations of CBC parameters to the received dose were determined, as well as of blood viscosity, as a research method for some structural alternation of blood proteins. This was also confirmed by the	erythrocytic and leukocytic indices  human blood HeNe	VIT	GB
Gm16											
Gm17	Penetration of the Laser Light Into the Skin	Kolárová H.	Ditrichová D.  Wagner J.	Lasers in Surgery and Medicine 24:231-235, 1999 © Wiley-Liss, Inc.	1999	231-235	"Penetration of the Laser Light Into the Skin In Vitro"	Knowledge of the optical parameters of the skin is important for all kinds of phototherapy. We analyzed	semiconductor laser  HeNe skin transmittance	VIT	GB
Gm17											
Gm18	Cancer or infection diseases	Ovsiannikov V.A.		International Laser Congress, Athens, Greece, 1996	1996		"Analysis of the low-energy laser treatment of some cancer or infection diseases in clinics"	The results of 5 year investigation of low-energy laser therapy for the treatment of some oncological and infection diseases are presented in this report. In our investigations we use special infrared lasers with a	cancer  infection oncological diseases infrared	CLIN	GB
Gm18											
Gm19	Pulmory diseases	Derbenjev V.A.	Mikhailov V.A.  Denisov I.N	Proceedings of SPIE Vol. 4166, 2000	2000	323-325	"The use of the low level laser therapy (LLLТ) in the treatment of some pulmory diseases (10-years experience)"	The purpose of the present study was to compare the efficacy of the treatment of some pulmory diseases with or without LLLТ. 130 patients (49) of them with acute pneumonia, 42-with chronic bronchitis, 39-with chronic bronchial asthma)	bronchial asthma  acute pneumonia chronic bronchitis	CLIN	GB
Gm19											
Gm20	Blood Pressure	Umeda Y.		Laser Therapy Vol.2 No. 2, 59-63, 1990 © John Wiley & Sons, Ltd.	1990	59-63	"Blood pressure controlled by low reactive level diode laser therapy (LLLТ)"	The effects of low reactive level laser therapy with an infrared diode laser on blood pressure, particularly the hypotensive effect were studied. Essential or	essential hypertension  laser bioactivation hypertension control infrared	CLIN	GB



Gm24	Tuberculosis of the Lymph Nodes	Puri MM.	Singla R.  Jaiswal A. Gupta K.  Jain RC.	Laser Therapy Vol.9, No.2, 55-58, 1997 © LT Publishers, U.K., Ltd.	1997	55-58	"Case reports on the role of laser therapy in the treatment of tuberculosis of the lymph nodes"	Tuberculosis of the lymph nodes is comparatively prevalent in India, and poses many problems in treatment, particularly due to the unpredictability of the response of the nodes to	tuberculous lymph nodes  HeNe adjunctive laser therapy subcutaneous laser therapy ATT chemotherapy	CLIN	GB
Gm24											
Gm25	Arteriosclerosis of the Lower Limbs	El-Kashef H.	Attia M.A.	Laser Therapy Vol.11., No.1, 26-29, 1999	1999	26-29	"Low level laser therapy in the treatment of arteriosclerosis of the lower limbs"	Twenty patients with lower limb arteriosclerosis were treated with a 20 mW continuous wave He-Ne laser and a 250 mW continuous diode laser, simultaneously. The laser light was applied to the	arteriosclerosis  HeNe diode laser scanner	CLIN	GB
Gm25											
Gm26	Female Infertility	Ohshiro T.	Fujii S.  Sasaki K. Yasuda S.  Chinn K. Ohshiro T.	Laser Therapy Vol.11 No.2, 96-102, 1999	1999	96-102	"Laser Therapy as an adjunct treatment for severe female infertility"	It is well accepted that with lasers, there are two modalities of treatment. One is the use of the photobiodestructive effect, as for example, in laser surgery where high reactive level laser	female infertility  childbirth adjunctive therapy  HeNe diode laser	CLIN	GB
Gm26											
Gm27	Skalarwellenstrahlung	Meyl K.		Co Med 06/01, 55-60, 2001	2001	55-60	"Skalarwellenstrahlung"	Alle technischen Errungenschaften und Erkenntnisse reichen nicht aus, um zu erklären, wie die Biologie und der	skalarwellen  photosynthesis	RE	D
Gm27											
Gm28	Prevention of Oral Mucositis	Whelan H.T.	Connelly J.F.  Hodgson B.D. Barbeau L. Post A.C. Bullard G.	Journal of Clinical Laser Medicine & Surgery Vol. 20, No. 6, 319-324, 2002 © Mary Ann Liebert, Inc.	2002	319-324	"NASA Light-Emitting Diodes for the Prevention of Oral Mucositis in Pediatric Bone Marrow Transplant Patients"	The purpose of this study was to determine the effects of prophylactic near-infrared light therapy from light-emitting diodes in pediatric bone marrow transplant recipients. Oral mucositis is a frequent side effect of chemotherapy that leads to increased morbidity. Near-infrared light has been shown to	LED  oral mucositis bone marrow NASA pediatric	CLIN	GB









Hp7	Behavior of Myofibroblasts	De Freitas A.C.	Pinheiro A.L.B.  De Oliveira M.G. Pedreira Ramalho L.M.	Journal of Clinical Laser Medicine & Surgery Vol. 20, No. 4, 221-225, 2002 © Mary Ann Liebert, Inc.	2002	221-225	"Assessment of the Behavior of Myofibroblasts on Scalpel and CO2 Laser Wounds: An Immunohistochemical Study in Rats"	The aims of this study were to quantitative and statistically assess the presence of myofibroblasts on both conventional and CO2 laser wounds. Wound contraction of both traumatic and surgical origin may reduce or limit the function of the tissue.	myofibroblasts  laser wounds rats  animal study CO2	VIV	GB
Hp7 Hp8	Zahnheilkunde	Bach G.		Laser Journal 3, 2002	2002		"Meister des "schnellen Schnitts""	Gas- oder CO2-Laser, wie sie zumeist genannt werden seit Ende der achtziger Jahre des vergangenen Jahrhunderts erfolgreich in der Zahnheilkunde eingesetzt.	CO2  vergleich	RE	D
Hp8 Hp9, S	Muscle Lesions	Conforti M.	Benedini M.	Laser & Tecnology Vol.12 N.1, 2002	2002		"High Power Neodymium Laser Therapy in the Treatment of Muscle Lesions Without Hematomas in Athletes"	In a perspective study, which lasted six months, a sample of 40 athletes with Class I and Class II lesions, was evaluated. The class was confirmed by means of ultrasound screening/C.T inspection, carried out with different equipment, with a 7.5 MHz/38 mm linear probe. In all	Nd-YAG-laser  muscle lesions  manual Vodder drainage Cyriax	CLIN	GB
Hp10	Super Lizer	Ogawa S.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 71-74, 2002 © Monduzzi Editore S.p.A.	2002	71-74	"Super Lizer: Its Properties and Clinical Usage"	Super Lizer, an instrument for irradiation of liner infra-red ray, has been used in the field of Pain Clinic, orthopedics, dematology and etc. Some clinical data concerning the excellent results	super lizer  infrared mixed wave continuous wave  1800mW	RE	GB
Hp10 M1	Epicondylitis	Forrer D.		Diploma, 1999, 1-29	1999	1-29	"Die Therapie der Epicondylitis lateralis mittels Laserbehandlung"	Diplomarbeit für Endexamen der Akademie Physiotherapie "Thim van der Laan" AG, Epicondylitis	epicondylitis  diploma	CLIN	D



N3	Incomplete peripheral nerve and brachial plexus injuries	Rochkind S.	Alon M.				"Laser Therapy as a New modality in the Treatment of Incomplete Peripheral Nerve and Brachial Plexus Injuries: Prospective Clinical Double-Blind Placebo-Controlled Randomized Study"	This double-blind clinical study indicates that laser therapy enhances the recovery of patients with incomplete peripheral nerve and brachial plexus injuries. The therapeutic results show an objective progressive improvement in nerve function, leading to a significant functional recovery.	low-enregy laser irradiation	DB	GB
N3			Drory V. Khaigrekht M. Brantwien T. Nissan M.						nerve randomized study peripheral nerve brachial plexus	CLIN	
N4, B	Ischemic damage in hippocampal slices	Iwase T.	Hori N.	Lasers in Surgery and Medicine 19:465-470 (1996), © Wiley-Liss, Inc.	1996	465-470	"Low Power Laser Irradiation Reduced Ischemic Damage in Hippocampal Slices In Vitro"	Low power laser irradiation has been reported to reduce injury, promote regeneration, and produce analgesia. While the mechanism is unknown, one hypothesis is that light produces	brain slice	VIT	GB
N4, B			Morioka T. Carpenter D.O.						excitability free radicals hypoglycemia HeNe		
N5	Sciatic Nerve	Nissan M.	Rochkind S.	Lasers in Surgery and Medicine 6:435-438 (1986), © Alan R. Liss, Inc.	1986	435-438	"HeNe Laser Irradiation Delivered Transcutaneously: Its Effect on the Sciatic Nerve of Rats"	For our study of the effect of low energy laser irradiation (LELI) on living tissue we used HeNe laser on rats. The exponential absorption was reaffirmed in the living tissues overlying the sciatic nerve. An optimal range of	HeNe	VIV	GB
N5			Razon N. Bartal A.						LELI nerve animal study		
N6	Sciatic Nerve, normal and injured	Rochkind S.	Nissan M.	Acta Neurochir (1986) 83: 125-130	1986	125-130	"Electrophysiological Effect of HeNe Laser on Normal and Injured Sciatic Nerve in the Rat"	The effect of low wnergy CW HeNe laser irradiation on normal and dissected nerves in the rat was examined. The methods are described. Results are compared to the laser effect on other living	HeNe	VIV	GB
			Razon N. Schwartz M.						nerve regeneration action potential		









N19	Mental and Lingual Nerves	Midamba E.D.	Haanaes H.R.	Laser Therapy Vol.5, No.2, 89-94, 1993 © John Wiley & Sons, Ltd.	1993	89-94	"Effect of low level laser therapy (LLLT) on inferior alveolar, mental and lingual nerves after traumatic injury in 15 patients. A pilot study"	The therapeutic effect of LLLT on the inferior alveolar, mental and lingual nerves was observed in a group of 15 patients with hort and long-term neurosensory impairment. In six subjects with clinical symptoms of less than 1 year' s duration, improvement of sensitivity increased from 0 to between 40 and 100% as	peripheral nerve injury  mental and lingual nerves diode laser infrared	CLIN	GB
N19											
N20	Peripheral Nerve Regeneration	Midamba E.D.	Haanaes H.R.	Laser Therapy 5; 125-129, 1993 © John Wiley & Sons, Ltd.	1993	125-129	"Low reactive-level 830 nm GaAIAs diode laser therapy successfully accelerates regeneration of peripheral nerves in human"	Forty patients with short and long-term neurosensory impairment following perioral nerve injuries are presented in this study. Assessment of their sensory level was undertaken using a variety of nerve tests, one of them was a visual analog scale for registration of	perioral nerve injury  neural regeneration peripheral nerve  GaAIAs diode laser	CLIN	GB
N20											
N21	Facial Palsy	Murakami F.	Kemmotsu O.  Kawano Y. Matsumura C. Kaseno S.	Laser Therapy 5; 131-135, 1993 © John Wiley & Sons, Ltd.	1993	131-135	"Diode low reactive level laser therapy and stellate ganglion block compared in the treatment of facial palsy"	In 52 patients who presented with peripheral facial paralysis, 26 received stellate ganglion block therapy, 11 received infrared diode laser low reactive level laser therapy, and 15 received a combination of both of	idiopathic facial palsy  diode laser Bell' s palsy stellate ganglion block  infrared	CLIN	GB
N21			Imai M.								
N22	Cerebral Palsy	Asagai Y.	Kanai H.  Miura Y.  Ohshiro T.	Laser Therapy, Vol.6, No.4, 195-202, 1994 © Laser Therapy, Ltd.	1994	195-202	"Application of low reactive-level laser therapy (LLLT) in the functional training of cerebral palsy patients"	In rehabilitative training and treatment of patients with cerebral palsy, return and maintenance of good muscle tonicity and suppression of tonic muscle spasm is crucial. However, an effective method that is reliable. simple. painless	cerebral palsy  relaxation of muscle spasm rehabilitation	CLIN	GB



N26	Facial Motor Nuclei	Snyder S.K.	Byrnes K.R.	Lasers in Surgery and Medicine 31:216-222, 2002 © Wiley-Liss, Inc.	2002	216-222	"Quantitation of Calcitonin Gene-Related Peptide mRNA and Neuronal Cell Death in Facial Motor Nuclei Following Axotomy and 633 nm Low Power Laser Treatment"	A persistent increase in calcitonin gene-related peptide immunoreactivity in motoneurons may serve as an indicator for regeneration after peripheral nerve injury. We examined the effects of low power laser treatment on axotomy-induced changes in alpha-CGRP mRNA and long-term neuronal survival in facial	633 nm  biostimulation CGRP facial nerve transection PCR quantitation  mRNA red light rats animal study HeNe	VIV	GB
N26			Borke R.C. Sanchez A. Anders J.J.								
N27	Different Areas of Neurology	Ivanov G.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 89-96, 2002 © Monduzzi Editore S.p.A.	2002	89-96	"Laser Stimulation on Marginal for the Medicine Cases in Different Areas of Neurology"	Cases-groups. Group 1: Functional disconnections of the spinal cord -4 cases. Group 2: Traumas of the brain -2 cases. Group 3: Post-insult conditions - 5 cases of ischemia and cortex	various wavelengths	CLIN	GB
O1	Femoral shaft fracture	Abe T.		Laser Therapy 175-178, 1990, © John Wiley & Sons, Ltd.	1990	175-178	"Diode Laser LLLT-Enhanced Bone Fusion of Femoral Shaft Fracture Complicated By Chronic Osteomyelitis: A Case Report"	Low reactive-Level Laser Therapy (LLLT) has been reported in the literature as enhancing bone generation and bone fusion in experimental animal models. This paper presents the application of LLLT for treatment of a fracture in an older patient with added complication of	laser bioactivation	CLIN	GB
O1									800-900 nm		
OR2	Arthritis, rheumatoid	Barberis G.	Gamron S.	Journal of Clinical Laser Medicine & Surgery, Volume 14, Numer 4, 175-177, 1996, ©Mary Ann Liebert, Inc.	1996	175-177	"In Vitro Synthesis of Prostaglandin E2 by Synovial Tissue after Helium-neon Laser Radiation in Rheumatoid Arthritis"	This paper reports the effect of helium-neon laser radiation (power of 5 mW and 632.8 nm wavelength) on the synthesis of PGE2 in vitro in synovial tissue of biopsy samples of knee joints in patients with chronic rheumatoid arthritis stages II or III. Twelve patients were studied.	rheumatoid arthritis  HeNe arthritis synovial tissue  600-690 nm	VIT	GB
			Acevedo G. Cadile I. Juri H.  Campana V.								

OR2			Castel A. Onetti C.M. Palma J.A.						8 J/cm2 pain relief synthesis of prostaglandin		
O3, M,D	Musculoskeletal and skin disorders	Beckerman H.	de Bie R.A.  Bouter L.M. de Cuyper H.J. Oostendrop R.AB.	Physical Therapy/Volume 72. Number 7, 1992	1992	13-21	"The Efficacy of Laser Therapy for Musculoskeletal and Skin Disorders: A Criteria-Based Meta- analysis of Randomized Clinical Trials"	The efficacy of laser therapy for musculoskeletal and skin disorders has been assessed on the basis of the results of 36 randomized clinical trials (RCTs) involving 1704 patients. For this purpose, a criteria-based meta- analysis that took into account the methodological quality of the individual trials was used. The	randomized clinical trials  laser therapy meta-analysis physical therapy  review skin disorders	CLIN	GB
O3, M,D											
O4, A	Schultertrauma	Bringmann W.		Originalia DZA 4/1998	1998	109-120	"Lasertherapie beim chronischen Schultertrauma"	Bereits Anfang der 70er Jahre begann Jnyushin den Softlaser anstelle von Nadeln in der Akupunktur zu verwenden. In den vergangenen drei Jahrzehnten	lasertherapie  schultertrauma 700-800 nm	CLIN	D
O4, A											
O5, B	Gastrocnemius muscle	Bibikova A.	Belkin V.  Oron U.	Anat Embryol (1994) 190:597-602, © Springer- Verlag	1994	597-602	"Enhancement of angiogenesis in regenerating gastrocnemius muscle of the toad (Bufo viridis) by low-energy laser irradiation"	The effect of low-energy laser (HeNe) irradiation on the process of neoformation of blood capillaries during regeneration in the toad (Bufo viridis) gastrocnemius muscle was studied using histomorphometric methods. The injured zones of the experimental toads were	skeletal muscle  regeneration 600-690 nm	VIV	GB
O5, B											
O6	Lombalgia	Cazzola M.	Castronuovo G.  Giavelli S. Hartmann E. Pisani L. Fava G.	Laser & Technology, Vol. 1 n. 3, 1991, 109-118, ©Wichtig Editore	1991	109-118	"I laser a HeNe e a GaAs nel trattamento della lombalgia del paziente anziano"	The last years have seen an increasing use of low-power laser for musculoskeletal pain in elderly people. Since the interactive mechanism of electromagnetic radiation for the	laser therapy  HeNe GaAs lumbago LLLT	CLIN	I
O6	Lumbago										
O7	Shoulder tendonitis	England S.	Farrell A.J.	Scand J Rheumatology 18: 427-431, 1989	1989	427-431	"Low Power Laser Therapy of Shoulder Tendonitis"	30 patients with supraspinatus or bicipital tendonitis were randomly allocated to active infrared laser therapy at 904 nm	laser therapy	CLIN	GB

			Coppock J.S. Struthers G. Bacon P.A.						shoulder tendonitis infrared >900 nm	B	
O7											
OR8	Therapieresisten ter insertionstendin opathien	Gärtner Ch.		Arthritis + Rheuma 8:27-33 (1986), © Verlag EBM GmbH	1986	27-33	"Behandlung therapieresistenter Insertionstendinopath ien mit Infrarot-Laser"	55 Patienten mit bislang erfolglos behandelten Insertionstendinopathien wurden mit Infrarot-Laser behandelt. Die Aufnahmekriterien waren erfüllt, wenn die Beschwerden	space mid-laser  infrarotlaser epicondylitis	CLIN	D
OR8											
OR9	Rheumatology	Gärtner Ch.		Laser Therapy, 1992; 4: 107-115, © John Wiley & Sons, Ltd.	1992	107-115	"Low Reactive-Level Laser Therapy (LLLT) In Rheumatology: A Review of the Clinical Experience In the Author' s Laboratory"	Advances in the application of low reactive-level laser therapy (LLLT) in the treatment of rheumatologic disease entities are presented from the author' s experience in a major rheumatology centre in Cologne, Germany. The literature is reviewed, showing clear	intractable tendinopathies  laser therapy NSAIDs	CLIN	GB
OR9											
O10	Osteoarticular diseases	Giavelli S.	Fava G.  Galanti A. Hartmann E. Pisani L. Castronuovo G. Spinoglio L.	Laser & technology Vol.5 n.3, 1995, 101-108	1995	101-108	"Low level laser therapy in osteoarticular diseases of geriatric patients"	Laser therapy in the treatment protocol of rehabilitation may include several clinical and technical fators peculiar to geriatric patients. Since it may be that the efficacy of laser	osteoarticular diseases  laser therapy elderly people LLLT HeNe CO2 GaAs	CLIN	GB
O10											
O11	Bone fractures	Glinkowski W.	Rowinski J.	Laser Therapy, 1995; 7: 67- 70, © Laser Therapy, Ltd.	1995	67-70	"Effect of low incident levels of infrared laser energy on the healing of experimental bone fractures"	Adult male BALB/C mice were used to investigate the influence of low level diode laser therapy on tibial fracture healing. Quantifiable and reproducible bone fractures were produced following the method of Borque	laser bioactivation	VIV	GB
O11											
OR12	Rheumatoid Arthritis	Goldman J.A.	Chiapella J.  Casey H. Bass N.  Graham J.	Surgery and Medicine 1:93- 100 (1980), © Alan R. Liss, Inc.	1980	93-100	"Laser Therapy of Rheumatoid Arthritis"	Thirty people with classical or definite rheumatoid arthritis received laser exposure to a Q- switch neodymium laser that	rheumatoid arthritis  polyarthritis connective tissue disease immunologic disease	CLIN  DB	GB

OR12			McClatchey W.						neodymium laser		
OR13	Gonarthrose	Götte S.	Keyl W.	Jatros Orthopädie 10 (1995) 12, 30-34	1995	30-34	"Doppelblindstudie zur Überprüfung der Wirksamkeit und Verträglichkeit einer niederenergetischen Lasertherapie bei Patienten mit aktivierter Gonarthrose"	Die niederenergetische Lasertherapie ist in den letzten Jahren in Deutschland sehr kontrovers diskutiert worden, obwohl einige positive Berichte zu dieser Therapie aus dem In- und Ausland vorliegen. Die positive ergebnisse einer von mir im Jahr 1990 durchgeführten retrospektiven Studie an 760 Patienten konnten jetzt durch die Doppelblindstudie bei aktivierter	lasertherapie	DB	D
			Wirzbach E.						gonarthrose HeNe infrarotlaser	CLIN	
OR13											
OR14	Skelett- und Bindegewebesystems	Götte S.		Orthopädie/Traumatologie 5 (1990) 8, 5-6	1995	5-6	"Degenerative und entzündliche Erkrankungen des Skelett- und Bindegewebesystems , Lasetherapie - Reizwort mit magischer Wirkung"	Lasertherapie ist ein Reizwort, bei dem über ausgeprägte Plazebowirkungen berichtet wird und das euphorische erfolgsberichte hervorrufen kann. Wie steht es nun mit Beweisen der therapeutischenWirksamkeit? Handelt es sich noch immer um ein weites Experimentierfeld oder	interview	CLIN	D
OR14									lasertherapie		
OR15	MID-Lasertherapie	Götte S.	Wirzbach E.	Orthopädie/Traumatologie/ Sportmedizin 7 (1992) 5, 31-32	1992	31-32	"MID-Lasertherapie in der Orthopädie - eine retrospektive Betrachtung der Therapieeffizienz"	Bekanntlicherweise wurde die biostimulatorische Lasertherapie im Rahmen der EBM-Reform von 1988 als Kassenleistung gestrichen. Der Entscheidung zugrunde gelegt wurden zwei Doppelblindstudien aus der Orthopädischen Klinik und der	orthopädie	CLIN	D
OR15									lasertherapie biostimulation		
O16	Epicondylitis and rotatorcuff syndrome	Gudmundsen J.	Vikne J.	Norsk Tidsskrift for Idrettsmedisin 1987;2:6	1987	1-6	"Laser Treatment of Epicondylitis Lateralis Humeri and Rotatorcuff Syndrome"	Laser has during the recent years become increasingly popular as a treatment for muscular and skeletal lesions. The lasers in use are Gallium-Arsenide laser	epicondylitis	DB	GB
O16									rotatorcuff >900 nm	DB	
OR17	Rheumatischer Krankheiten	Krohn-Grimberghe B.	Lonauer G.	Rheuma 2/1986, 18-24	1986	18-24	"Erfahrungen bei der Behandlung rhaumatischer Krankheiten mit der MID-Laser-Infrarot-Therapie"	Die vorliegende retrospektive Studie untersucht die Wirkung der MID-Laser-Infrarot-Therapie bei rheumatischen Krankheiten. Das Krankengut umfasst 713 Patienten mit folgende Diagnosen: chronische Polyarthritits, Coxarthrose,	MID-lasertherapie	CLIN	D

OR17									infrarotlaser dupuytren syndrome		
OR18, A	Rheumatoider arthritis	Matulis A.A.	Vasilenkojtis V.V.	Rheuma 2/1985	1985	1-6	"Lasertherapie und - punktur bei rheumatoider Arthritis, deformierender Osteoarthrose und Psoriasis- Arthropathie"	External laser treatment of the joints with coherent, monochromatic red light with a strength of 12mWt and a wavelength of 632.8 nm induces an anti-inflammatory, analgesic effect and leads to a normalization of the permeability	arthritis	CLIN	D
OR18,A			Rajstenskij I.L. Cheremnykh- Aleksenko E.N.  Gajgalene B.A.						osteoarthritis lasertherapie  psoriasis- arthropathie 600-690 nm analgesia		
O19	Tendinitis	Meier J.L.	Kerkour K.	Médecine et Hygiène 16, 907-911, 1988	1988	907-911	"Traitement laser de la tendinite"	From a survey, with double blind control, of 58 cases of patellar tendinitis and 52 cases of	tendinitis	DB	F
O19	Tendinite								HeNe infrared	CLIN	
O20,P	Lumbago	Ohshiro T.	Shirono Y.	Laser Therapy, 1992; 4: 121-126, © John Wiley & Sons, Ltd.	1992	121-126	"Retroactive Study in 524 Patients on the Application of the 830 nm GaAIAs Diode Laser in Low Reactive-Level Laser Therapy (LLLT) for Lumbago"	From 1983, out of 4500 pain patients treated at Ohshiro clinic, 1500 has lumbago-related disease entities. From 1987 until the present, a period of 61 months, 524 patients with a variety of lumbar diseases received low reactive-level laser therapy, LLLT, using the GaAIAs diode laser (830 nm, 60 mW, continuous wave). There were 364	herniated disc	CLIN	GB
O20, P									800-900 nm		
O21, P	Pain attenuation	Toya S.	Motegi M.	Laser Therapy, 1994; 6: 143-148 © Laser Therapy, Ltd.	1994	143-148	"Report on a Computer- randomized Double Blind Clinical Trial to Determine the Effectiveness of the GaAIAs (830 nm) Diode Laser for Pain Attenuation in Selected Pain Groups"	The efficiency of infrared diode low reactive-level laser therapy has been reported in a variety of pain complaints. In order to ascertain if LLLT is particularly effective in a given pain group, 115 informed and consenting patients in two institutions were assigned to groups according to the aetiology of their pain condition. Each patients name was placed against a number, and a randomization computer	LLLT	DB	GB
			Inomata K. Ohshiro T. Maeda T.						cervical pain lumbar pain joint pain	CLIN	

O21, P									pain attenuation		
O22, S	Tennisellbogen	Palmieri B.				2-5	"Eine Doppel-Blind-Studie, gesichert über Kreuz, an unter Tennisarm" leidenden Amateur-Tennis-Spielern unter Anwendung von Infrarot-Laser-Therapie"	Die therapeutischen Effekte der I.R. Laser-therapie verglichen mit einer "Placebos"-Scheinanwendung (Laser ausgeschaltet) wurden in Doppel-Blind-Cross-over Tests an 30 (15+15) an "Tennisarm" leidenden Patienten untersucht. Die Laser-therapie zeigte rasche Genesung an. Die wohltuenden Wirkungen waren anhaltend und	infrarotlaser	DB	D
O22, S									lasertherapie tennisellbogen	CLIN	
O23, PA	Schmerzzuständen am Bewegungssapparat	Rossetto M.		Medizinzeitung Nr. 7/Sommerausgabe 97, 1-3	1997	1-3	"Low-Level-Laser-Therapie bei Schmerzzuständen am Bewegungsapparat"	Im Frühjahr 1995 haben wir unser Therapieangebot durch die Anschaffung eines Low-Level-Laser_gerätes (Med 2000 der Firma Lasotronic AG, Zug) erweitert. Aufgrund fehlender praktischer Erfahrungen mit	schmerz	CLIN	D
O23, PA									LLLT epicondylitis arthritits		
O24, PA	Trigger Points Technique	Simunovic Z.		Journal of Clinical Laser Medicine & Surgery, Volume 14, number 4, 163-167, 1996 © Mary Ann Liebert, Inc.	1996	163-167	"Low Level Laser Therapy with Trigger Points Technique: A Clinical Study on 243 Patients"	Among the various methods of application techniques in low level laser therapy (HeNe 632.8nm visible red or infrared 820-830nm continous wave and 904nm pulsed emission) there	LLLT	CLIN	GB
O24, PA									HeNe trigger point chronic pain		D
O25, PA	Epicondylitis, Medial and Lateral	Simunovic Z.	Trobonjaca T.	Journal of Clinical Laser Medicine & Surgery, Volume 16, Number 3, 145-151, 1998 © Mary Ann Liebert, Inc.	1998	145-151	"Treatment of Medial and Lateral Epicondylitis-Tennis and Golfer' s Elbow-with Low Level LAser Therapy: A Multicenter Double Blind, Placebo-Controlled Clinical Study on 324 Patients"	Among the other treatment modalities of medial and lateral epicondylitis, low level laser therapy has been promoted as a highly successful method. The aim of this clinical study was to assess the efficacy of LLLT using trigger points (TPs) and scanner application techniques under placebo-controlled conditions. The current clinical study was completed at two Laser Centers as a double-blind, plecebo controlled, crossover clinical studv. The patient population.	epicondylitis	CLIN	GB
			Trobonjaca Z.						trigger point		





O31	Bone repair	Barushka O.	Yaakobi T.  Oron U.	Bone, Vol. 16, No.1, 47-55, 1995© Elsevier Science Inc.	1995	47-55	"Effect of Low-Energy Laser (He-Ne) Irradiation on the Process of Bone Repair in the Rat Tibia"	The effect of low-energy laser irradiation on bone repair in tibia of the rat after hole injury was investigated using biochemical and quantitative histomorphometrical methods.	histomorphometry  HeNe rats animal study bone repair	VIV	GB
O31											
O32	Bone repair	Yaakobi T.	Maltz L.  Oron U.	Calcif Tissue Int 59:297-300, 1996© Springer-Verlag New York Inc.	1996	297-300	"Promotion of Bone Repair in the Cortical Bone of the Tibia in Rats by Low Energy Laser (He-Ne) Irradiation"	The effect of low energy laser irradiation on bone repair in the cortical part of the tibia of the rat was investigated using biochemical and radioactive labeling methods. A fixed round hole was created in the lateral	HeNe  rats repair	VIV	GB
O32											
O33	Muscle regeneration	Weiss N.	Oron U.	Anat Embryol 186:497-503, 1992© Springer-Verlag	1992	497-503	"Enhancement of muscle regeneration in the rat gastrocnemius muscle by low energy laser irradiation"	The effect of low-energy laser irradiation on the rate of skeletal muscle regeneration after partial excision of the rat gastrocnemius muscle was studied using quantitative histological morphometric methods.The injured zones of the experimental	skeletal muscle  HeNe	VIV	GB
O33											
O34	Skeletal muscles	Weiss N.	Bibikova A.  Keysari A. Oron U.	Lasers in Medical Science 9:167-171, 1994© W.B.Saunders Company Ltd.	1994	167-171	"Expression of Desmin in Normal and Laser (HeNe) Irradiated Regenerating Skeletal Muscles in the Toad (Bufo viridis) and the White Rat"	The expression of desmin was investigated using immunohistochemical methods in normal and low-energy laser irradiated regenerating rat and toad gastrocnemius muscles following partial excision in the former and cold injury in the latter. During the initial stages of	skeletal muscle  rats toads animal study HeNe	VIV	GB
O34											
O35	Cell proliferation and differentiation	Ben-Dov N.	Shefer G.  Irinitchev A. Wernig A. Halevy O.	Biochimica et Biophysica Acta 1448, 372-380, 1999© Elsevier Science B.V.	1999	372-380	"Low-energy laser irradiation affects satellite cell proliferation and differentiation in vitro"	Low-energy laser irradiation was found to promote skeletal muscle regeneration in vivo. In this study, its effect on the proliferation and differentiation of satellite cells in vivo was evaluated. Primary rat satellite	satellite cell  proliferation differentiation cyclin cell cycle	VIT	GB



O40	Healthy Growth Plate	Cheetham M.J	Young S.R.	Laser Therapy Vol.4, No.2, 59-63, 1992 © John Wiley & Sons, Ltd.	1992	59-63	"Histological effects of 820 nm laser irradiation on the healthy growth plate of the rat"	Low level laser therapy has been in clinical use in the United Kingdom for over 15 years. Recently, clinicians have expressed concern that if LLLT is used to treat a lesion adjacent to	bone growth	VIV	GB
O40			Dyson M.						growth plate photobioactivation		
O41	Herniated Lumbar/Sacral Disc	Abe T.		Laser Therapy Vol.1, No.2, 93-95, 1989 © John Wiley & Sons, Ltd.	1989	93-95	"LLLT using a diode laser in successful treatment of a herniated lumbar/sacral disc, with magnetic resonance imaging (MRI) assessment: a case report"	A 40-year-old woman presented at the Abe Orthopaedic Clinic with a 2-year history of lower back pain and pain in the left hip and leg, diagnosed as a ruptured disc between the 5th lumbar/1st sacral vertebrae. The condition had failed to respond to conventional treatment methods including pelvic traction, non-steroid anti-inflammatory drugs and dural block anaesthetic	GaAIAs	CLIN	GB
O41									diode laser ruptured disc herniated disc MRI magnetic resonance imaging		
O42	Myogenic Torticollis	He J.		Laser Therapy Vol.3, No.1., 41-43, 1991 © John Wiley & Sons, Ltd.	1991	41-43	"154 cases of myogenic torticollis treated with low incident energy combination carbon dioxide and helium neon laser beam"	Secondary myogenic torticollis, or wryneck, results from difficulties during delivery, and is quite common in the neonate in the P.R.O.C. It is easily seen after birth, and can quickly develop into a painful chronic condition involving involuntary spasmodic contractions of the affected	myogenic torticollis	CLIN	GB
O42									wryneck congenital torticollis bioactivation HeNe CO2 scanner		
O43	Tendons	Enwemeka C.S.	Cohen-Kornberg E.	Laser Therapy, Vol.6, No.4, 181-188, 1994 © Laser Therapy, Ltd.	1994	181-188	"Biomechanical effects of three different periods of GaAs laser photostimulation on tenotomized tendons"	The calcaneal tendons of 31 rabbits were tenotomized, repaired and immobilized in order to determine the effects of treatment intervention time on tensile strength, tensile stress, energy absorption capacity, and	tendon healing	VIV	GB
			Duswalt E.P.						biostimulation		



O48	Fibromyalgia	Gür A.	Karakoc M.  Nas K. Cevik R. Sarac J. Demir E.	Laser Med Sci 15:57-61, 2002 © Springer-Verlag London Limited	2002	57-61	"Efficacy of Low Power Laser Therapy in Fibromyalgia: A Single-blind, Placebo-controlled Trial"	Low energy lasers are widely used to treat a variety of musculoskeletal conditions including fibromyalgia, despite the lack of scientific evidence to support its efficacy. A randomized, single-blind,	fibromyalgia  pain muscle spasm placebo GaAs infrared	B	GB
O48											
O49	Congenital Dislocation of the Hip	Asagai Y.	Ohshiro T.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 49-52, 2002 © Monduzzi Editore S.p.A.	2002	49-52	"Application of Low Level Laser Therapy in the Treatment of Congenital Dislocation of the Hip"	In Japan, treatment of hip abduction in flexion in an infant with congenital dislocation of the hip, only guidance for a diaper which prevents the movement of both extremities from being limited as well as its use is	dislocation of the hip  infant GaAs	RE	GB
O49											
O50	Perthes Disease	Asagai Y.	Ohshiro T.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 97-100, 2002 © Monduzzi Editore S.p.A.	2002	97-100	"Application of Infrared Irradiation Therapy To Perthes Disease"	No consensus has been reached about the treatment of Perthes disease, though a number of approaches have been reported including conservative treatment with various orthoses and surgical treatment. In	infrared  perthes disease  1800mW	RE	GB
O50											
O51,M	Connective Tissue Repair Processes	Enwemeka C.S.	Reddy G.K.	Laser Therapy Vol.12, 22-30, 2000	2000	22-30	"The Biological Effects of Laser Therapy and Other Physical Modalities on Connective Tissue Repair Processes"	Connective tissue injuries, such as tendon rupture and ligamentous strains, are common. Unlike most soft tissues that require 7-10 days to heal, primary healing of tendons and other dense connective tissues take as much as 6 - 8	tissue repair  therapeutic ultrasound electrical stimulation meta-analysis HeNe GaAs	RE	GB
O51,M											
O52	Bone Defect Healing	Guzzardella G.A.	Fini M.  Torricelli P.	Lasers Med Sci 17:216-220, 2002 © Springer-Verlag London Limited	2002	216-220	"Laser Stimulation on Bone Defect Healing: An In Vitro Study"	The aim of this in vitro study was to evaluate whether low-power laser stimulation can accelerate bone healing. Bone defects of a standard area were created in the	bone healing  experiment	VIT	GB



P3, B	Myofascial trigger points	Laakso E.L.	Cramond T.  Richardson C. Galligan J.P.	Laser Therapy, 1994; 6: 133-142, ©Laser Therapy, Ltd.	1994	133-142	"Plasma Acth and Beta-Endorphin Levels in Response to Low Level Laser Therapy (LLLT) for Myofascial Trigger Points"	The mechanism by which laser phototherapy (LLLT) induces analgesia in the treatment of chronic pain is not understood. To investigate a possible role for opioids in this treatment, a double-blind, placebo-controlled study was designed to compare	analgesia  chronic pain cytokines visible	DB  CLIN VIV	GB
P3, B P4	Pain attenuation	Shiroto C.	Yodono M.  Nakaji S.	Laser Therapy, 1998; 10: 33-40, © LT Publishers, U.K., Ltd.	1998	33-40	"Pain Attenuation With Diode Laser Therapy: A Retrospective Study Of The Long-term LLLT Experience In The Private Clinic Environment"	We report on a 130 month retrospective study of pain entities treated with 830 nm diode laser therapy carried out at the authors' clinic. In 11,139 mostly chronic pain patients (M:F 1:1,5) presenting with a total of 19,275 symptoms, an overall efficacy rate of 82 +/- 5.7% was achieved. The results were recorded under five grades:	chronic pain  placebo effect  arthritis	CLIN	GB
P4 P5	Myofascial pain and dysfunction syndromes	Pöntinen P.J.	Airaksinen O.		1994	1-6	"Evaluation of Myofascial Pain and Dysfunction Syndromes and Their Response to Low Level Laser Therapy"	The purpose of this article is to present a method for evaluation and follow-up of myofascial pain and dysfunction syndromes (MPS). Since 1987 our study group has tested various pressure threshold (PTH) and	myofascial pain  TENS infrared	CLIN	GB
P5 P6 P6	Postoperative pain	Moore K.C.	Hira N.  Broome I.J. Cruikshank J.A.	Laser Therapy 145-149, 1992, © John Wiley & Sons, Ltd.	1992	145-149	"The Effect of Infra-Red Diode Laser Irradiation on the Duration and Severity of Postoperative Pain: A Double Blind Trial"	This trial was designed to test the hypothesis that LLLT reduces the extent and duration of postoperative pain. Twenty consecutive patients for elective cholecystectomy were randomly allocated for either LLLT or as controls. The trial was double	postoperative pain  GaAIAs LLLT infrared 800-900 nm analgesia	CLIN  DB	GB



P7	Chronic Low Back Pain	Soriano F.	Ríos R.	Laser Therapy, 1998. 10: 175-180, © LT Publishers, U.K., Ltd.	1998	175-180	"Gallium Arsenide Laser Treatment of Chronic Low Back Pain: A Prospective, Randomized and Double Blind Study"	Patients of more than 60 years of age and affected by chronic low back pain were randomly assigned to two groups. Group A, consisting of 38 patients, was irradiated with a pulsed GaAs diode laser, 904 nm, pulse width 200 nsec, pulse frequency 10,000Hz, peak power of 20 W,	low back pain	DB	GB
P7									GaAs chronic pain	CLIN	
P8, A	Myofascial pain and musculoskeletal disorders	Pöntinen P.J.		8. World Congress on Pain, Postcongress Satellite Symposium Presentation, 1996	1996	1-16	"Low Energy Photon Therapy in Treatment of Musculoskeletal Disorders and Particularly in Myofascial Pain and Dysfunction"	Since 1987 our study group has studied the effects of low energy photon therapy (LEPT) on tender spots and trigger points in healthy subjects and in patients suffering from musculoskeletal disorders and myofascial pain and dysfunction syndromes.	musculoskeletal disorders	CLIN	GB
P8, A									HeNe		
P9	Chronic pain	Walker J		Neuroscience Letters, 43, 339-344, 1983 © Elsevier Scientific Publishers Ireland Ltd.	1983	339-344	"Relief From Chronic Pain by Low Power Laser Irradiation"	In a double blind study; repeated irradiation with a low-power (1mW) helium-neon laser produced relief in subjects with chronic pain. Analgesia was	serotonin metabolism	DB	GB
P9									HeNe chronic pain 5-hydroxyindoleacetic acid	CLIN	
P10	Herpes Zoster Pain	Otsuka H.	Numazawa R.	Laser Therapy, 7:027-032, 1995 © Laser Therapy, Ltd.	1995	27-32	"Effects of helium-neon laser therapy on herpes zoster pain"	The efficacy of HeNe laser therapy for pain attenuation on patients with herpes zoster was evaluated in 33 patients. The HeNe laser was applied with a	HeNe	CLIN	GB
P10			Okubo K. Enya T. Saito Y.						herpes zoster pain postherpetic neuralgia GaAlAs		
P11	Pain Attenuation	Maeda T.		Laser Therapy Vol.1, No.1, 23-26, 1989 © John Wiley & Sons, Ltd.	1989	23-26	"Morphological demonstration of low reactive laser therapeutic pain attenuation effect of the gallium aluminium arsenide diode laser"	It is possible to increase the volume of mitochondria in certain types of nerve cells with free nerve endings which are sensitive to pain-producing substances. In order to achieve this increase, the substance must be high-density, and be in contact with the cell for a	mitochondria	VIV	GB
P11									trigeminal nerve bradykinin diode laser		

P12	Pain Attenuation	Shiroto C.	Ono K.  Ohshiro T.	Laser Therapy Vol.1, No.1, 41-47, 1989 © John Wiley & Sons, Ltd.	1989	41-47	"Retrospective study of diode laser therapy for pain attenuation in 3635 patients: detailed analysis by questionnaire"	In a 46-month term, 3635 patients presented for pain attenuation with a gallium aluminium arsenide diode laser. The mean age of the patients was 53.8 years. Analysis of subjective treatment assessment over the	GaAIAs  diode laser bioactivation pain therapy	CLIN	GB
P13	Post Herpetic Neuralgia	McKibbin L.S.	Downie R.	Laser Therapy Vol.3, No.1., 35-39, 1991 © John Wiley & Sons, Ltd.	1991	35-39	"Treatment of post herpetic neuralgia using a 904nm (infrared) low incident energy laser: a clinical study"	Thirty nine patients were treated for post-herpetic neuralgia. A linear analog scale from 0-10 was used to score the results. A 904 nm low energy infrared laser pulsed at 4000 Hz was used. A laser head containing 10 diodes,	post herpetic neuralgia  infrared gallium arsenide	CLIN	GB
P14	Pain Attenuation of Postherpetic Neuralgia	Kemmotsu O.	Sato K.  Furumido H. Harada K. Takigawa C. Kaseno S. Yokota S. Hanaoka Y. Yamamura T.	Laser Therapy Vol.3, No.2, 71-75, 1991 © John Wiley & Sons, Ltd.	1991	71-75	"Efficacy of low reactive-level laser therapy for pain attenuation of postherpetic neuralgia"	The efficacy of low reactive-level laser therapy for pain attenuation in patients with postherpetic neuralgia was evaluated in 63 patients managed at our pain clinic over the past four years. A	GaAIAs  double blind test pain clinic postherpetic neuralgia pain attenuation diode laser PHN 830 nm	CLIN	GB
P15	Pain attenuation	Mizokami T.	Aoki K.  Iwabuchi S. Kasai K. Yamazaki Y. Sakurai T. Samejima K. Yoshii N.	Laser Therapy Vol. 5, No.4, 165-168, 1993 © John Wiley & Sons, Ltd.	1993	165-168	"LLLT (Low reactive level laser therapy) - a clinical study: relationship between pain attenuation and the serotonergic mechanism"	The relationship between pain attenuation and serotonig mechanism by low powered laser have been studied. The subjects of 63 cases, having chronic pain and good pain relief were invetigated and the change ratio of plasma serotonin was analysed. On first time laser	serotonin metabolism  chronic pain pain attenuation GaAIAs semiconductor laser 803 nm 632.8 nm	CLIN	GB

P16	Pain Attenuation	Shiroto C.	Nakaji S.  Sasaki M. Yodono M.	Laser Therapy Vol. 6, No. 3., 149-156, 1994 © Laser Therapy, Ltd.	1994	149-156	"Extended experience in GaAIAs diode laser therapy for pain attenuation, and the importance of staff education and clinical environment on LLLT efficacy"	The Shiroto Clinic in Goshogawara has been studying the efficacy of low reactive-level laser therapy in pain attenuation using the 830 nm GaAIAs diode laser since 1984, and the authors and colleagues have presented regular updates in this journal and at various national and international congresses, including the last three ILTA	chronic pain  diode laser staff education  environmental influence patient education	CLIN	GB
P16											
P17	Postherpetic Neuralgia	Yamada H.	Ogawa H.	Laser Therapy Vol.7, No.2, 071-074, 1995 © Laser Therapy, Ltd.	1995	71-74	"Comparative study of 60 mW diode laser therapy and 150 mW diode laser therapy in the treatment of postherpetic neuralgia"	Over the past year, eight patients with postherpetic neuralgia were treated with diode low reactive-level laser therapy with an output power of 60 mW at 830 nm, while a further nine cases of PHN were treated with 830 nm diode LLLT at an output of 150 mW. The data were analyzed to compare the	diode laser  post herpetic neuralgia	CLIN	GB
P17											
P18	Postherpetic Neuralgia	Numazawa R.	Kemmotsu O.  Otsuka H. Kakehata J.  Hashimoto T. Tamagawa S.  Mayumi T.	Laser Therapy Vol.8, No.2, 143-148, 1996 © LT Publishers. Ltd	1996	143-148	"The role of laser therapy in intensive pain management of postherpetic neuralgia"	The role of low reactive-level laser therapy in intensive pain management of postherpetic neuralgia was evaluated in 31 patients with PHN. Patients had severe and/or persistent pain,	postherpetic neuralgia  pain clinic pain management  GaAIAs semiconductor laser HeNe scanning	CLIN	GB
P18											
P19	Stellate Ganglion	Hashimoto T.	Kemmotsu O.	Laser Therapy Vol.9, No.1, 7-12, 1997 © LT Publishers, U.K., Ltd.	1997	7-12	"Efficacy of laser irradiation on the area near the stellate ganglion is dose-dependent: a double-blind crossover placebo-controlled study"	In the present study we evaluate the effects of laser irradiation on the area near the stellate ganglion on regional skin temperature and pain intensity in patients with postherpetic neuralgia. A double blind, crossover and placebo-controlled study was designed to determine the placebo effect of laser	stellate ganglion	DB	GB

P19			Otsuka H. Numazawa R. Ohta Y.						postherpetic neuralgia crossover placebo-controlled study  GaAIAs	RCT	
P20,B	Analgesic Effect	Navratil L.	Dylevsky I.	Laser Therapy Vol.9, No.1, 33-40, 1997 © LT Publishers, U.K., Ltd.	1997	33-40	"Mechanisms of the analgesic effect of therapeutic lasers in vivo"	The analgesic effects in the course of application of therapeutic lasers to affected tissue have been described in a number of works in the literature.	non-invasive laser therapy  endorphins analgesic effect  nerve transmission rates	VIV  RE	GB
P20,B											
P21	Chronic Pain	Fukuuchi A.	Suzuki H.	Laser Therapy Vol.10, No.2, 59-64, 1998 © LT Publishers, U.K., Ltd.	1998	59-64	"A double-blind trial of low reactive-level laser therapy in the treatment of chronic pain"	The utility of low reactive-level GaAIAs semiconductor laser therapy for chronic pain was evaluated in a double-blind clinical trial in 82 patients. Results obtained were also	semiconductor laser  chronic pain GaAIAs	DB  CLIN	GB
P21			Inoue K.								
P22	Pain Attenuation	Kemmotsu O.		Laser Therapy Vol.10, No.4, 151-152, 1998 © LT Publishers, U.K., Ltd.	1998	151-152	"Laser therapy for pain attenuation of postherpetic neuralgia - a decade of challenge"	We first reported the efficacy of laser therapy for pain attenuation in patients suffering from postherpetic neuralgia in 1991, and we have been using laser therapy for many patients with PHN for over a decade. PHN is a	postherpetic neuralgia	RE	GB
P23	Tempomandibular Joint Pain	Kobayashi M.	Kubota J.	Laser Therapy Vol.11, No.1, 11-18, 1999	1999	11-18	"Treatment of tempomandibular joint pain with diode laser therapy"	Tempomandibular joint pain can be very debilitating for the affected patient, particularly when it is a chronic disorder associated with tempomandibular disorder. Low reactive laser therapy has been	tempomandibular joint disorder  trismus diode laser	CLIN	GB
P23											
P24	Chronic Back Pain Syndrome	Ruetten S.	Meyer O.	Journal of Clinical Laser Medicine & Surgery Vol. 20, No. 4, 203-206, 2002 © Mary Ann Liebert, Inc.	2002	203-206	"Application of Holmium:YAG Laser in Epiduroscopy: Extended Practicabilities in the treatment of Chronic Back Pain Syndrome"	Minimally invasive and endoscopic techniques offer advantages in the treatment of chronic back pain syndrome and may provide for expanded indications and visualization. Epiduroscopy for the visualization of the epidural space still is burdened with	epiduroscopy  chronic back pain	CLIN	GB
			Godolias G.								





R7	Synovial Membrane Articular Tissue	Calderhead R.G.	Inomata K.	Laser Therapy Vol.4, No.2, 65-68, 1992 © John Wiley & Sons, Ltd.	1992	65-68	"A study on the possible haemorrhagic effects of extended infrared diode laser irradiation on encapsulated and exposed synovial membrane articular tissue in the rat"	Low reactive-level laser therapy has been reported as having a beneficial effect in the therapy of rheumatoid arthritis. Some concerns have been expressed about the possible photothermal damage to articular tissue, for example the synovial membrane, following extended doses of LLLT such as are usually applied. The present study was designed to assess qualitatively and quantitatively the possible	photobioactivation  laser therapy dosimetry infrared diode laser synovial membrane	VIV	GB
R7											
R8	Rheumatoid Arthritis	Asada K.	Yutani Y.  Shimazu A.	Laser Therapy Vol.1, No3., 147-151, 1989 © John Wiley & Sons, Ltd.	1989	147-151	"Diode laser therapy for rheumatoid arthritis: a clinical evaluation of 102 joints treated with low reactive-level laser therapy (LLLT)"	Low reactive-level laser therapy has been shown to be effective in wound healing, accelerated bone formation and removal of both chronic and acute pain types. Rheumatoid arthritis is a particularly painful condition, gradually causing loss of movement in the affected joints due to the extreme pain caused	GaAIIAs  diode laser rheumatoid arthritis bioactivation	CLIN	GB
R8											
R9	Knee Osteoarthritis	Trelles M.A.	Rigau J.  Sala P.  Calderhead G. Ohshiro T.	Laser Therapy Vol.3, No.4, 149-153, 1991 © John Wiley & Sons, Ltd.	1991	149-153	"Infrared diode laser in low reactive-level laser therapy (LLLT) for knee osteoarthritis"	Degenerative joint disease, in particular in the knee, is difficult to cure successfully at present, often requiring surgical intervention. In addition, the chronic DJD patient often	degenerative joint disease  adjunctive photochemotherapy infrared diode laser	CLIN	GB
R9											
R10	Nail Disorders	Shoji A.	Inoue A.	Laser Therapy Vol.10, No.2, 73-78, 1998 © LT Publishers, U.K., Ltd.	1998	73-78	"Treatment of nail disorders with LLLT (part I)"	Patients with a variety of nail disorders were treated with diode low reactive-level laser therapy. Three representative cases are presented. Case 1 was a 28-year-old Japanese female with	distal interphalangeal arthritis  diode laser twenty nail dystrophy	CLIN	GB

R10									green nail longitudinal ridges GaAIAs		
R11	Inflammation	Campana V.R.	Gavotto A.	Laser Therapy Vol.11., No.1, 36-42, 1999	1999	36-42	"The relative effects of He-Ne laser and meloxicam on experimentally induced inflammation"	Certain crystals cause synovial tissue inflammation and variability of inflammatory indicators like plasmatic prostaglandin E2, fibrinogen and synovial tissue PGE2. We evaluated Helium-Neon laser	biostimulation	VIV	GB
R11			Soriano F. Juri H.O. Spitale L.S.						inflammation meloxicam synovial tissue		
R11			Simes J.C. Palma J.A. Moya M.						HeNe prostaglandin fibrinogen		
R12	Early Stages of Rheumatoid Arthritis	Ailioaie C.	Lupusoru-Ailioaie M.L.	Laser Therapy Vol.11 No.2, 79-87, 1999	1999	79-87	"Beneficial effects of laser therapy in the early stages of rheumatoid arthritis onset"	The purpose of this study was to determine the effects of laser therapy in pain reduction and/or recovery of patients at the onset of Rheumatoid Arthritis, comparatively with the traditional	rheumatoid arthritis	CLIN	GB
R12									anti-inflammatory drugs		
R12									diode laser		
R13	Osteoarthritis of the Hip	Pöntinen P.J.		NAALT 2003 workshop abstract, 2003	2003	1-2	"Osteoarthritis (OA) of the Hip Treated with Laser Therapy"	The most common of painful conditions affecting the joints is osteoarthritis which affects more than 20 million Americans. Patients are typically older than	osteoarthritis	RE	GB
R13									hip GaAIAs 780nm		
Rr1	Damaged heart tissue			Biophotonics International, may 2001	2001	10	"Study finds laser treatment helps heal damaged heart tissue"		report	RE	GB
Rr2	Noninvasive Therapeutic Modality	Galletti G.		Laser Therapy Vol.9, No.3, 131-136, 1997 © LT Publishers, U.K., Ltd.	1997	131-136	"Low power laser therapy: a noninvasive highly effective therapeutic modality"	Over the past 15 years the author and his colleagues have treated over 1500 patients with a wide range of pathological conditions using a variety of low power lasers with different wavelengths	homeostasis	RE	GB
Rr2									ulcers wound healing defocused CO2		
Rr3	Laser-damaged eyes	Schneider I.		Laser Focus World, Vol. 38, No. 10, 2002	2002	20-26	"LEDs may heal laser-damaged eyes"		eye injury	RE	GB



Rr3									LED mucositis damaged retinal cell		
Rr4	Heilende Wirkung des roten Lichtes	Müller H.		Raum&Zeit 119, 2002	2002		"Die heilende Wirkung des roten Lichtes"	In russischen Krankenhäusern wird seit einigen Jahren eine junge und viel versprechende	biostimulation	RE	D
Rr5,I	Chronische Lebererkrankungen	Skvorcov V.V.	Nedogoda V.V.	Raum&Zeit 119, 2002	2002	6-12	"Niederleistungs-Lasertherapie gegen chronische Lebererkrankungen"	175 Patienten mit chronischen Lebererkrankungen wurden an der Medizinischen Akademie Wolgograd intravenös mit schwacher monochromatischer Rotbestrahlung als Monotherapie	chronische lebererkrankungen  leberzirrhose hepatitis intravenös lipidperoxidase	CLIN	D
Rr5,I											
Rr6	Laser-Therapie in der Praxis	Sonntag O.					"Der Einsatz der Low-Level-LASER-Therapie in der Praxis"	Betrachtet man heute den Gerätepark in der medizinischen und naturheilkundlichen Praxis, so verliert sich hier und da	applikationen	RE	D
Rr7	Heilendes Licht	Schwabe V.	Menke M.	Co Med 08/02, 58-62, 2002	2002	58-62	"Heilendes Licht"	Die Erfolgsstory des Lasers ist nicht mehr aufzuhalten. Über 100 Doppelblindstudien haben den Wirksamkeitsnachweis der	basic information	RE	D
Rr7									Laser Therapy Institute (LTI)		
Rr8	Laser-Tissue Interaction	Reiss S.M.		Biophotonics International, July/August, 40-45, 2001	2001	40-45	"Unlocking the Mysteries of Laser-Tissue Interaction"	The more researchers study the effects of lasers on targeted tissues, the more they are coming to appreciate the variety and complexity of these critical	clinical applications	RE	GB
Rr9, Gm	Chronic Postmastectomy Lymphedema	Piller N.B.	Thelander A.	Lymphology 31, 74-86, 1998	1998	74-86	"Treatment of Chronic Postmastectomy Lymphedema With Low Level Laser Therapy: A 2.5 Year Follow-Up"	Ten women with unilateral arm lymphedema after axillary clearance and radiotherapy for breast cancer received 16 treatment sessions with Low Level Laser Therapy over 10 weeks and seven patients were followed for 36 months. The	arm lymphedema  postmastectomy	CLIN	GB
Rr9, Gm									HeNe diode laser		
Rr10	Global Scaling in der Heilpraxis	Müller H.		raum&zeit special 1, 122-126		122-126	"Global Scaling in der Heilpraxis GS-Infrarot beschleunigt Heilprozess"	Gene Roddenberry' s Star-Trek-Helden verwendeten Wundheil-Acceleratoren auf dem Raumschiff "Enterprise" bereits Anfang der 70er. als die	heilpraxis	RE	D
Rr10									global scaling infrarot		

Rr11	Laser Surgery and Medicine	Atsumi K.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 7-10, 2002 © Monduzzi Editore S.p.A.	2002	7-10	"Past, Present and Future of Laser Surgery and Medicine"	Paradigm shift in future medicine will occur by breakthrough of laser surgery and medicine. Clinical treatment will be changed revolutionally replacing traditional surgery with laser	surgery	RE	GB
Rr11									preventive		
Rr12	Future of Laser Therapy	Kubota J.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 11-22, 2002 © Monduzzi Editore S.p.A.	2002	11-22	"The Future of Laser Therapy"	A mere thirty years ago, laser therapy was in its infancy, with only a few isolated pioneers working in the field such as Mester in Hungary, Plogg in Canada and Ohshiro and	future of laser therapy	RE	GB
Rr13	Why Living Body Reacts to Laser Beam	Ohshiro T.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 23-31, 2002 © Monduzzi Editore S.p.A.	2002	23-31	"Why Does a Living Body React To a Laser Beam?"		review	RE	GB
Rr14	Clinical Laser in Japan	Shiroto C.	Nakaji S.	Proceedings of the 4th Congress of the World Association for Laser Therapy, 59-69, 2002 © Monduzzi Editore S.p.A.	2002	59-69	"Current State-of-the-art of the Clinical Laser in Japan"		review	RE	GB
Rr14			Umeda T.						history indications evaluation		
Rr15	Contraindications in Noninvasive Laser Therapy	Navratil L.	Kymplova J.	Journal of Clinical Laser Medicine & Surgery Vol. 20, No. 6, 341-343, 2002 © Mary Ann Liebert, Inc.	2002	341-343	"Contraindications in Noninvasive Laser Therapy: Truth and Fiction"	Noninvasive laser therapy is a treatment method employed in many disciplines. This review article points out instances when it appears to be effective to administer such therapy.	contraindications	RE	GB
Rr15									applications		
S1, T	Sportmedizin	Poloi R.	Beltrami Gf.	Revue de la fédération médecine sportive, 1-11		1-11	"Lasertherapie in der Sportmedizin"	Folgende Verletzungen wurden behandelt: 10 fälle von epicondylitis (Tennisellbogen) Erhebung Gelenkforsatz. 9 Fälle	sportmedizin	CLIN	D
S1, T			Montani G. Coiana L.						epicondylitis tennisellbogen achillessehne		
S2	Achilles Tendinopathy	Meersman P.		Laser Therapy Vol.11, No.3, 144-150, 1999	1999	144-150	"Laser pharmacology and achilles tendinopathy"	The achilles tendon, although the largest and strongest tendon in the human body, has been recognized as a weak point since classical times. In the case of	achilles tendinopathy	CLIN	GB
S2									photodynamic therapy various wavelengths		

S3	Sports Injuries	Gable P.					"Why LLLT (Laser Therapy) is a Valid Immediate Treatment Tool for Sports Injuries"	Immediate treatment of acute sports injuries is normally through the standard protocols of the application of "RICE" and avoiding "HARM". The use of electrotherapy modalities is rare	acute sports injury	RE	GB
S3									ATP		
S4, Hp	Pubalgia	Miglio D.	Algeri G.	Laser & Tecnology, Vol.12, N.1, 2002	2002	46-48	"Use of High Power Neodymium YAG Laser and FCZ Laser in the treatment of Pubalgia"	This study refers to the treatment of pubalgia according to a protocol in which the use of an association of two high power lasers, Nd-YAG 1064nm and FCZ 810nm 980nm, was foreseen for the first time. Due to the long	pubalgia	CLIN	GB
S4, Hp									Nd-YAG-laser FCZ-laser semiconductor laser		
T1	Acute-Phase Injury	Asagai Y.	Imakiire A.	Laser Therapy Vol. 12, 31-33, 2000	2000	31-33	"Thermographic Study of Low Level Laser Therapy for Acute-Phase Injury"	Acute-phase injury is generally treated by localized cooling of the region, and rarely by the active use of low level laser therapy (LLLT) in Japan. Thermographic studies of acute-	acute-phase injury	CLIN	GB
T1			Ohshiro T.						thermography anke joint sprain		
T1									semiconductor laser		
U1	Prostatite Cronica Abatterica	Strada G.	Baccalin A.	III Giornate Andrologiche Italiane, Bari 13-15 ottobre 1994 © Monduzzi Editore S.p.a.	1994	87-89	"Modificazioni quantitative e qualitative del liquido seminale in corso di prostatite cronica abatterica (PCA) prima e dopo esposizione a laser infrarosso endouretrale"	Vengono descritte le modificazioni quantitative e qualitative del liquido seminale in 30 pz. Affetti da prostatite cronica abatterica (PCA) dopo esposizione a laser infrarosso veicolato per via transuretrale. Vengono riportati I risultati.	prostatite cronica abatterica	CLIN	I
U1			Musci R. Frea B. Meroni T Scardino E. Verweji F. Kojancic E.						infrarosso endouretrale		

U2	Newly Acute Chronic Prostatitis	Strada G.	Baccalin A.  Frea B.  Scardino E. Musci R. Rocco F.	Urologia Vol 81, 196-197, 1994 Editoriale Urologia	1994	196-197	"Trattamento con laser infrarosso endouretrale delle prostatiti croniche abatteriche riacutizzate"	The authors present a new infrared laser device with endourethral atraumatic optic fiber capable of effectively treating patients with newly acute chronic prostatitis. Costbenefit ratio is excellent and the method	newly acute chronic prostatitis  endourethral atraumatic optic fiber infrared abacterial	CLIN	I	
U2	U3, Hp	Troubles uro-génitaux	Richard P.	Schweiz. Zschr. GanzheitsMedizin 2/93, 82-96, 1993			"Lasers et troubles uro-génitaux"	La sphère uro-génitale est particulièrement exposée, tant chez l' homme que chez la	CO2  infrared Nd-YAG uro-génitaux	CLIN	F	
U3, Hp	U4	Prostatic Problems	Mazo V.	Laser Therapy, 1994; 6: 203-208, 1994 © Laser Therapy, Ltd.	1994	203-208	"Transrectal Low Level Laser Therapy in the Management of Prostatic Problems: A Pilot Study"	A pilot study is presented on the transrectal application of helium neon laser energy via a specially-designed probe for the treatment of chronic prostatitis in a patient population of 235. Laser therapy was administered at doses from	prostatitis  benign prostatic hypertrophy  prostatodynia HeNe transrectal	CLIN	GB	
U4	U5	Hypertrophie benigne de la prostate	Constancis P.	Paturange F.  Andre J-M. Romeo J-M.			"Resultats preliminaires du traitement de l' hypertrophie benigne de la prostate par lasertherapie infrarouge par sonde endo-rectale"	Notre etude repose sur les effets biophysiques des lasers infrarouges: Amelioration de la micro-circulation, augmentation du drainage veineux et lymphatique, action anti-inflammatoire et antalgique. Le protocole consiste en 6 seances de lasertherapie endo-rectale, delivrant 60 joules/cm2.	hyperthrophy  prostate infrared	CLIN	F	
U5	U6	Male Infertility	Hasan P.	Rijadi S.A.  Purnomo S.	Laser Therapy Vol.1, No.1, 49-50, 1989 © John Wiley & Sons, Ltd.	1989	49-50	"The possible application of low reactive level laser therapy (LLL) in the treatment of male infertility"	The clinical use of low reactive level laser therapy has been reported in several aspects of bioactivation. This study reports an investigation into the possible application of LLLT for the treatment of male infertility. Four	azoospermy  oligospermy	CLIN	GB

			Kainama H.						spermatogenesis infertile male bioactivation biostimulation		
U6											
V1	Lasertherapie und Laserakupunktur in der Veterinär- und Humanmedizin	Petermann U.		Der Akupunkturarzt/Aurikulotherapeut 2/2000, 3-13	2000	3-13	"Lokale Lasertherapie und Laserakupunktur in der Veterinär- und Humanmedizin"	Vorliegender Artikel gibt eine Übersicht über biophysikalische Grundlagen, Bedeutung und Anwendungsbereiche der Lasertherapie. Darüber hinaus sind Studienergebnisse zur Wirkung von Therapielasern präsentiert. Es werden wichtige	übersicht	RE	D
V1									laserakupunktur		
V2	Horses with COPD	Petermann U.		Laser & Tecnology Vol.11 N.2-3., 2001, 30-37	2001	30-37	"Laseracupuncture in horses with COPD"	105 horses with extreme COPD were treated exclusively using laser acupuncture. No other	acupuncture	CLIN	GB
V2									horse COPD infrared		
V3,D	Open Wound Healing of the Teat in Cattle	Ghamsari S.M.	Yamada H.	Laser Therapy, Vol.6, No.2., 113-118, 1994 1994 © Laser Therapy, Ltd.	1994	113-118	"Evaluation of low level laser therapy on open wound healing of the teat in dairy cattle"	Open wounds on the anterior surface of teats in four dairy cattle were irradiated using low level laser therapy. The laser used was a helium-neon system with an output of 8.5 mW,	dairy cattle	CLIN	GB
V3,D			Acorda J.A. Unno N.						teat open wound healing hydroxyproline HeNe		
V4,D	Teat Wounds in Dairy Cattle	Ghamsari S.M.	Yamada H.	Laser Therapy Vol.7, No.2, 081-088, 1995 © Laser Therapy, Ltd.	1995	81-88	"Histopathological effects of low level laser therapy on secondary healing of teat wounds in dairy cattle"	Experimentally-induced teat wall wounds in four dairy cattle were subjected to treatment with a helium-neon laser at 632.8 nm wavelength. The 16 teats were divided in a Latin Square design into 4 groups and subjected to different doses of low level laser:	secondary healing	CLIN	GB
V4,D			Acorda J.A. Taguchi K. Abe N.						histopathology dairy cattle teat wounds		
V5	LLL-Diagnostic and Therapy in Veterinary Practice	Roesti A.		Proceedings of the 4th Congress of the World Association for Laser Therapy, 81-87, 2002 © Monduzzi Editore S.p.A.	2002	81-87	"LLL-Diagnostic and Therapy in Veterinary Practice"	This definition of life is a Paradigm of me: We are "vacuumised-light emanating-water & salt bags" with a spul and some spirit. Therefore we need first to supply us properly	vacuum	RE	GB
									water and salt resonance		

V5									nogier and bahr frequencies		
(R6,B)	Muscle regeneration	Bibikova A.	Oron U.	Anat. Rec. 235:374-380, 1993	1993	374-380	"Promotion of muscle regeneration following cold injury to the toad (Bufo viridis) gastrocnemius muscle by low energy laser irradiation"		muscles  regeneration toads animal study	VIV	GB
(R5,B)	Muscle regeneration	Bibikova A.	Oron U.	Anat. Rec. 241:123-128, 1995	1995	123-128	"Regeneration in denervated toad gastrocnemius muscle and promotion of the process by low energy laser irradiation"		regeneration  muscles toads animal study	VIV	GB
	Embryo implantation	Stein A.	Kraicer P.  Oron U.	Proceedings of Low Power Light Effects in Biological Systems, Vol.3198, 24-30, 1997	1997	24-30	"Effect of low energy (He-Ne) irradiation on embryo implantation rate in the rat"		implantation  embryo rats animal study HeNe	VIV	GB
	Cardioprotective effects	Yaakov N.	Bdolah A.  Wolberg Z. Ben Haim S. Oron U.	Basic.res.Cardiol.95:385-389, 2000	2000	385-389	"Cardioprotective effects of low energy laser irradiation after intoxication of the mouse heart with sarafotoxin from the burrowing asp"		cardioprotective  intoxication heart mice animal study	VIV	GB

	Activation of signal transduction pathways	Shefer G.	Oron U.  Irintchev A.  Wernig A. Halevy O.	J.Cell. Physiol. 187:73-80, 2001	2001	73-80	"Low energy laser irradiation activates specific signal transduction pathways in skeletal muscles"	signal transduction pathways  skeletal muscle  cells activation	VIV	GB
	Infarction and Reperfusion injury	Yaakobi T.	Ben Haim S.  Oron U.	J. App. Physiol.			"Low energy laser irradiation on infarction and reperfusion injury in the rat heart"	infarction  reperfusion heart rats animal study	VIV	GB
(B36)	Infarct size	Ad N.	Oron U.	Inter. J. Cardiol.			"The impact of low energy laser irradiation on infarct size in the rat following myocardial infarction"	myocardial infarction  infarct size rats animal study	VIV	GB
	Hypertrophic heart	Oron U.	Yaakov N.  Ben Haim S.	Laser Therapy (accepted to)			"Low power laser irradiation reduces interstitial scarring in isoproterenol-induced hypertrophic rat heart"	interstitial scarring  heart rats animal study	VIV	GB
	Histopathological changes in satellite cells	Oron U.	Shefer G.  Cullen M. Halevi O.	Laser Therapy (accepted to)			"Low energy laser irradiation does not cause histopathological changes in satellite cells in culture"	histopathological changes  satellite cell cells	VIT	GB

Proliferation and differentiation of osteoblasts	Stein A.	Benayahu D.  Maltz L. Oron U.	Bone (submitted to)			"Effect of low energy lasers on proliferation and differentiation of human osteoblasts in vitro"		proliferation  differentiation osteoblasts	VIT	GB
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