Michael Weber, J Tissue Sci Eng 2015, 6:2
http://dx.doi.org/10.4172/2157-7552.S1.021

OMICS International
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4th International Conference on
Tissue Science and Regenerative Medicine
July 27-29, 2015 Rome, Italy

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## Basics and clinical applications of laser needle acupuncture, intravenous, interstitial, intra-articular and photodynamic laser therapy

In this lecture new methods of laser therapy will be presented covering nearly the whole range of important diseases in medicine. Laser needle acupuncture with different wavelengths and penetration depths can be used as a highly effective and pain free method for all indications of acupuncture and pain management. Laser needles can be applied on the body, on the skull or the ear as well. Infrared, red and yellow lasers can penetrate the skull bone and used today for benefit on brain diseases. Intravenous laser therapy is a systemic application of laser light with infrared, red, green, blue and yellow wavelengths. This method stimulates the immune system, leads to an improved microcirculation and oxygen supply and improves endurance in sports people. Furthermore all wavelengths stimulate the different complexes of the respiratory chain in the mitochondria leading to an increase of ATP-production and thus are well suited for all fields of regenerative medicine in mitochondrial degeneration. Especially blue laser dissociates nitric oxide from haemoglobin and complex IV in the mitochondria and so leads to improved microcirculation, biogenesis of mitochondria and prevents cell senescence. Nitric oxide also activates telomerase and so protects against degradation of telomers with possibly extended life expectation. We also know today that intravenous laser therapy can activate endogenous stem cells with improvement of organ function. Main therapeutic fields are angiopathies, neuropathies, fibromyalgia and chronic fatigue syndrome, autoimmune and metabolic diseases, depression, all diseases on basis of mitochondrial degeneration and anti-aging in general. Interstitial laser therapy is a new method using fiberoptic catheters for application of different lasers in the depth of the tissue close to the spot of injury. It's a new method for treatment and regeneration of herniated disks and other nerve injuries. For intra articular laser therapy a fiberoptic laser catheter will be placed directly in a joint and is a highly effective treatment of advanced osteoarthritis of the knee, shoulder and other joints. All laser colors including non penetrating blue laser can be used successfully. This therapy can be combined with injection of PRP or mesenchymal stem cells with light activation for achieving regenerative effects on the cartilage. New therapeutic approaches for photodynamic cancer therapy are presented as well using the different laser colors externally and interstitially with new photosensitizers for all type of cancers.

### Biography

Michael Weber has completed his studies in chemistry and biochemistry at University Marburg and at University Goettingen he completed his PhD during 1983. He was researcher at Max-Planck-Institute for Experimentel Medicine in Göttingen. He is the Leader of 3 medical laser centers in Germany and Bangkok in Thailand. He is the President of the International Society for Medical Laser Applications (ISLA) and also Board Member of the North American Association for Laser Therapy (NAALT). He is author of many international publications in the field of Medical Laser Therapy. He established his own company (weber medical GmbH) in 2003 supported by the German government and the EU.

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