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External and invasive laser stimulation of intravenously and intra-articular applied mesenchymal stem cells and PRP in regenerative medicine

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In this study, new methods of laser therapy will be presented for use in regenerative medicine. Laser needles with different wavelengths and penetration depths can be used externally as a highly effective and pain free method for pain management. Laser needles can be applied on all parts of the body. Infrared lasers can penetrate the skull bone and are used today for benefit on brain diseases. However, penetrating laser light also initiates mitochondrial stimulation with tissue regeneration. 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. Endogenous stem cells released from the bone marrow will be stimulated in the blood stream and leads to improved organ function. Interstitial and intra-articular laser therapies are new methods using a fiber optic catheter application of different lasers in the depth of the tissue or directly in joints close to the spot of injury. It is successful in treatment of herniated, nerve injuries and advanced osteoarthritis of the knee, shoulder, hip and other joints. Lasers can also invasively stimulate PRP and stem cells in joints or in the blood stream. They have excellent effects on tissue regeneration because they provide light of all spectral colors for stimulation of the mitochondria by enhancing ATP-production. So laser light activates intravenously or intra-articular applied mesenchymal stem cells with better survival and differentiation.

Biography

Michael Weber completed his Diploma in Chemistry and Biochemistry from the University of Marburg in Germany and Medical studies from University of Göttingen, Germany. From 1974-1976, he was High School Teacher in Chemistry, Biology and Physics. From 1984-1987, he was Assistant Doctor at University clinic of Göttingen. He is authorized Educator for general medicine, natural medicine and acupuncture by the government medical association in Hannover, Lower Saxony. He is a President of the American Association of Biological Laser Therapy and Acupuncture (AALA) and President of the International Society for Medical Laser Applications (ISLA). He is a Board Member of NAALT (North American Association for Laser Therapy) and Co-editor of the Journal "Pain and Acupuncture".

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