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Electrical muscle stimulation: Essential in health and disease, in primary and secondary prevention

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Electrical muscle stimulation (EMS) is just following the steps and evolution of exercise: one of the enormous accumulations of evidence about its possible medical benefits and high safety and feasibility profile. EMS is nearing inclusion at contemporary essential guidelines for health maintenance, primary and secondary prevention and rehabilitation, with a range of actions extending from healthy people to various categories of chronic patients. It appears to exert regenerative and reparatory effects on the endothelium, to mobilize endothelial progenitor cells; to favorably affect the microcirculation; to induce mesenchymal stem cell potentiation; to exert multilevel beneficial immune, metabolic and endocrine actions related to cytokine, hormonal, neural, anti-inflammatory and anti-oxidant modifications. By these pleotropic pathophysiologic mechanisms, it is evidenced that, EMS improves cardiovascular fitness and overall health; prevents ICU-acquired weakness or sarcopenia, pressure ulcers and venous thromboembolic disease; decreases pathological cardiac remodeling in heart disease, and sympathetic activity; alleviates dyspnea in malignancy or COPD; improves glucose metabolism in metabolic syndrome or diabetes patients; reinforces post injury neuroregeneration; improves spasticity, urinary/fecal incontinence, pelvic floor dysfunction, and chronic pain syndromes; enhances tissue perfusion; and assists in muscle reeducation. Further emerging applications relate to psychological health (such as depression); to post-surgical prevention of atelectasis and cough reinforcement; and to dysphagia in stroke or anorexia nervosa patients. Many applications of this endless list are FDA approved already. EMS needs to be considered as part of numerous medical conditions, and any health-care professional needs to be aware of its indications.

Biography

Christos Stefanou is an Internist and Intensivist in Limassol General Hospital ICU of Cyprus, where he is in-charge of the educational program; and an Honorary Associate Professor of Medicine at St George's University. He was ranked first class in his Medical School of Athens University; and finished his fellowship at Evangelismos Hospital of Athens, Greece; and his internship in the USA. He is a PhD candidate and researcher in the pathophysiology and regenerative properties of electrical muscle stimulation. He has also been the President of psychosocial support and health group of Cyprus Red Cross.

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