Non-athletic Cohorts Addressed by Longitudinal Whole-Body Electromyostimulation Trials – an Evidence Map

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Whole body EMS is touted as a “time-effective, joint-friendly and highly customizable alternative to conventional exercise”. We already know that it is a great method for exercise, but intervention in individuals with a variety of active disease processes has not been studied extensively due to a list of absolute contraindications published in 2019. That said, much of this meta analysis compared belt electrode skeletal muscle electrical stimulation (B-SES) vs. standard WB-EMS because B-SES has started to look more closely at individuals with illness and disease. That’s why this meta analysis is so important (for the future of EMS) - researchers are starting to acknowledge the amount of people who look at the effects of EMS on individuals with medical issues and the effects of EMS on the medical issue itself.

This paper reports on the results of studies done on people who may benefit from EMS, who aren’t athletic or very active. Researchers found 86 studies from 5 databases that fit the criteria they were examining. Participants ranged from 18 years and up, both male and female, 58% being overweight or obese; B-SES and WB-EMS application varied between once a week and daily, and between 12-20 minutes and 90 minutes per session. Medical conditions were present in approximately 60% of them, which allowed researchers to investigate effects of EMS on the following: cancer/neoplasm, diabetes, metabolic syndrome, nervous system disease, chronic heart failure, stroke, peripheral arterial disease, knee arthrosis, sarcopenia, chronic non-specific low back pain, osteopenia, chronic kidney disease and other (unspecified) critical illness.

Results:

Cancers – no studies showed adverse effects; evidence for benefits of EMS intervention are moderate.

Endocrine, nutritional and metabolic diseases –
Obesity: no adverse effects seen in obese individuals; evidence for benefits of EMS intervention are high.
Diabetes: no adverse effects seen in most studies of individuals with diabetes (including ulcers and amputations, end stage diabetes kidney disease); evidence for EMS intervention is moderate-high.
Cardiometabolic diseases: effects (of EMS on diabetes) may increase evidence for EMS intervention.

Diseases of the nervous system - no negative effects on stage 1 – stage 3 Parkinson’s

Cardiovascular disease: 2 studies failed to report effects, yet all others show no adverse effects of EMS.
Ischemia/peripheral arterial disease – no adverse effects reported.

Stroke – no adverse effects reported.

Musculoskeletal and connective tissue disorders:
Osteoarthritis: no adverse effects reported.
Sarcopenia: no adverse effects reported.
Non-specific chronic low back pain: no adverse effects reported.
Osteopenia/osteoporosis: no adverse effects reported.

In conclusion, WB-EMS and B-SES is a safe method for most individuals, but this meta-analysis only barely scratched the surface. Studies were conducted by (science/medical) professionals, in professional and/or medical settings. Much more proof is needed, but this is certainly a step in the right direction for electrical muscle stimulation!