

## **Electro Muscle Stimulation (EMS) as a full body training – Multi-fitness centre study.**

(VATTER, J., Universität Bayreuth, 2003; Publication AVM-Verlag München 2010).

### **Objective**

The objective of this field study was to assess if positive impact on body strength, anthropometry, body wellness, mood, overall health conditions, back pain can be reached through electrical stimulated muscle training.

### **Methodology**

134 people (102 female and 32 male) at an average age of 42,5 years volunteered to participate in the study, which was carried out in four different fitness centres. Questionnaires that the participants filled out before and after the 6-week training were assessed; their results were compared to those of a control group (10 people) and were assessed by age and sex. Maximal body strength, endurance, body weight, body fat percentage, body circumference, frequency and intensity of back pain, and urinary incontinence, overall health condition, mood, vitality, body stability and body shape all were assessed. Participants trained 45 minutes, 2x per week for a total of 12 sessions. They began with a 10 to 15 minute long familiarization phase to adjust for the individual's pulse intensity, followed by a 25 minute long training session, during which different static exercise positions were taken up by the participants. There was a five minute long relaxation period at the end of the training session.

### **Results**

82% of the participants noticed a relief in back pain, 30% of those were free of pain. At the beginning of the training, 40% of them had complained about chronic pain. The maximum body strength of the participants increased by 12% and their endurance by 69%. There were no notable changes in the control group.

The participants' body weight and body mass index (BMI) stayed more or less the same. However, the body fat percentage decreased by 1,4% in the training group. Younger participants lost more weight than older ones. There were no notable differences according to sex or weight. In all female participants, size was significant reduced, on average by -0,7cm at the bust, -0,7cm at the thighs, -1,4cm at the waistline and -1,1cm at hips. The men had an average reduction in the waistline by -1,1cm; the size of the upper arm was increased by an average of +1,5cm, the size of the chest by an average of +1,2cm and the size of the thighs by an average of 0,3cm. There were no noticeable positive changes in the control group. There was an improvement in the feeling of wellness by 83% of the people and

participant's muscles felt less tight. 89 % of the test group had improved body stability and performance; 84 % felt an increase in general fitness. 87 % of the test group noticed a positive change in their overall physique. A higher training intensity resulted in greater improvement, especially in people with physical problems. However, a more intense training also deepened muscle soreness.

### **Conclusion**

The full body EMS-training is a good method to reduce widespread back pain yet also increases the body strength and is equal to or better than results from conventional strength training. Improvements to body shape and overall mood were appealing to men and women of all age groups alike. In conclusion, the study supports full body EMS training as an effective training method, which will benefit a broad range of target groups.

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