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Effects of electrical muscle stimulation on waist circumference in adults: A randomized controlled trials

Eun Jung Choi

Daedong Hospital, Republic of Korea

Obesity is one of the leading preventable causes of death worldwide and the biggest concern of public health. To the best of our knowledge, no Randomized Controlled Trials (RCT) evaluating the effect of EMS on obesity or regional fat distribution have been performed. We hypothesized that EMS is an effective and safe treatment of man and woman with abdominal obesity so that EMS decrease Waist Circumference (WC) or abdominal fat, increase abdominal muscle mass and improve biochemical markers. Therefore, we designed first RCT study to investigate EMS efficacy for 12-week program by comparing it with Transcutaneous Electrical Nerve Stimulation (TENS). EMS group had a 5.1 ± 2.8 cm decreased in WC while TENS group showed a 2.9 ± 3.3 cm loss in WC after 12 weeks. In EMS group, WC declined more sharply in the latter half than in the first half of the study. Furthermore, when dividing participants in subgroups according to the degree of WC loss (less than 2 cm, 2 cm to 4 cm and more than 4 cm), 70.0% of EMS group lost 4 cm more off of their WC while 46.7% of TENS group lost lesser than 2 cm of their WC. There was no difference between EMS and TENS in self-rated satisfaction scores at week 1 but there was significant difference at week 12 (3.3 ± 0.7 vs. 3.7 ± 0.7 $p < 0.05$). In abdominal fat distribution and other metabolic and biochemical characteristics, there were no differences between EMS and TENS groups throughout 12 weeks. However, fasting FFA levels were significantly higher in EMS than TENS group at week 12. All participants completed the protocol without adverse symptoms. No changes in CK, LDH, AST, ALT and Cr were observed in both groups during the experimental period. Therefore, 12-week program of EMS significantly reduced the waist in abdominal obese adults without side effects. Therefore EMS is an effective and safe treatment of man and woman with abdominal obesity.

Biography

Eun Jung Choi is very popular in Busan as a professional Dieter because she lost 20 kgs in 2 years by lifestyle modification and is maintaining her BMI as 22 for 1 year. She gave lecture at Korean Society for the study of obesity in 2016 about losing weight. She was on KNN TV talkshow on Jan 7, 2018 about diet and also wrote many newspaper articles.

ej_jump@hanmail.net

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