

## Targeted Fat Loss through Electrical Stimulation in Women During Interval Training

Jean P. Boucher, FACSM, André Cyr, Zied Haj Hamida, James A. Hodgdon, FACSM, Alain S. Comtois

UQAM, Montreal, QC, CAN, CSSS Gatineau, QC, CAN, San Diego, CA, USA.

Previous work (Haj Hamida, Z. et al., 2011) demonstrated the efficacy of a specific low intensity electrical stimulation (ES) in inducing fat cell lipolysis. Applied work (Haj Hamida, Z. et al., 2008) also demonstrated that this specific ES could produce targeted fat loss in women at the stimulation site during endurance training. **PURPOSE:** Validate the ES targeted fat loss hypothesis in women. **METHODS:** 30 female participants (age,  $35 \pm 5.6$  y; height,  $1.63 \pm 0.07$  m; weight,  $79.2 \pm 14.4$  kg; BMI,  $29.6 \pm 3.9$  kg·m<sup>2</sup>) were randomly allocated into two groups: a stimulation group (SG, n=14) and a placebo group (PG, n=16). All participants followed a 10-week 3 sessions a week training program (45 min. moderate interval training at 65% of VO<sub>2</sub>max with active rest periods 35 % - 45 % of VO<sub>2</sub>max). Right and left lateral thigh regions of each SG participant were electrically stimulated (6 mA square wave pulse alternating current, FITTnLEAN, Laval, QC, CAN) during training. The PG participants were also fitted with identical stimulators where the electrodes were internally disconnected from the current generator. All participants were told that it was possible not to feel the ES since the current was so low. The experimental design was triple-blind: participants, those working on the project and the statistician were unaware of group assignment. Tests were conducted at the beginning (T1), in the middle (T2) and at the end (T3) of training to measure: height, weight and BMI; % fat (DXA); thigh (stimulated site) and abdomen (control site) fat pad thickness (ultrasound); hip circumference; fat mass in the gynoid region (DXA). **RESULTS:** Group main effect and GT interaction were stable for weight, BMI and %fat. However, %fat decreased from T1 to T3 (Test main effect, 4.54% relative difference, effect size = 0.80). The thigh fat pad thickness also decreased by 8 % in SG and by only 5 % in PG from T1 to T3 (effect size = 0.41), while the abdomen fat pad thickness decreased similarly for both groups (SG 8.8 % and PG 8.5 %). **CONCLUSION:** This new placebo controlled project support our previous research on women also showing targeted fat loss effect of specific low intensity electrical stimulation combined with interval training.

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