

Variations of high frequency parameter of heart rate variability following osteopathic manipulative treatment in healthy subjects compared to control group and sham therapy: randomized controlled trial.

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Abstract

CONTEXT: Heart Rate Variability (HRV) indicates how heart rate changes in response to inner and external stimuli. HRV is linked to health status and it is an indirect marker of the autonomic nervous system (ANS) function.

OBJECTIVE: To investigate the influence of osteopathic manipulative treatment (OMT) on cardiac autonomic modulation in healthy subjects, compared with sham therapy and control group.

METHODS: Sixty-six healthy subjects, both male and female, were included in the present 3-armed randomized placebo controlled within subject cross-over single blinded study. Participants were asymptomatic adults (26.7 ± 8.4 y, 51% male, BMI 18.5 ± 4.8), both smokers and non-smokers and not on medications. At enrollment subjects were randomized in three groups: A, B, C. Standardized structural evaluation followed by a patient need-based osteopathic treatment was performed in the first session of group A and in the second session of group B. Standardized evaluation followed by a protocolized sham treatment was provided in the second session of group A and in the first session of group B. No intervention was performed in the two sessions of group C, acting as a time-control. The trial was registered on clinicaltrials.gov identifier: [NCT01908920](https://clinicaltrials.gov/ct2/show/study/NCT01908920).

MAIN OUTCOMES MEASURES: HRV was calculated from electrocardiography before, during and after the intervention, for a total amount time of 25 min and considering frequency domain as well as linear and non-linear methods as outcome measures.

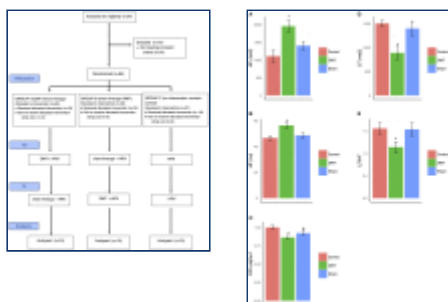
RESULTS: OMT engendered a statistically significant increase of parasympathetic activity, as shown by High Frequency power ($p < 0.001$), expressed in normalized and absolute unit, and possibly decrease of sympathetic activity, as revealed by Low Frequency power ($p < 0.01$); results also showed a reduction of Low Frequency/High Frequency ratio ($p < 0.001$) and Detrended fluctuation scaling exponent ($p < 0.05$).

CONCLUSIONS: Findings suggested that OMT can influence ANS activity increasing parasympathetic function and decreasing sympathetic activity, compared to sham therapy and control group.

KEYWORDS: autonomic nervous system; healthy subjects; heart rate variability; high frequency; osteopathic medicine; parasympathetic effect; smoking

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