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Protocol: Neurophysiological Effects of Craniosacral Treatment on Heart Rate Variability

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Protocol status: Working
We use this protocol and it's working

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Abstract

Craniosacral treatment is an osteopathic technique grounded in the assumption that there is an intrinsic, fine movement of the cerebrospinal fluid. This rhythmic movement can be utilized for diagnostic and therapeutic purposes by palpation and manipulation of the skull, spine, and associated connective tissues. Therapeutic benefit is likely due to action on the autonomic nervous system, specifically through the vagus nerve. Current literature on the neurophysiological effects of craniosacral treatment is extremely limited, which has contributed to controversy regarding the effectiveness of this technique. Due to this, heart rate variability (HRV) as a measure of cardiovascular stress and autonomic system activity is proposed as a tool to evaluate the neurophysiologic effects of craniosacral treatment. HRV can be analyzed in two different bands, high-frequency (HF) and low-frequency (LF) power. HF is associated with a parasympathetic response while LF is generally associated with a sympathetic response.In this meta-analysis, we will analyze the effect of craniosacral therapy on heart rate variability.

Troubleshooting

Title

1 Neurophysiological Effects of Craniosacral Treatment on Heart Rate Variability

Registration

2 Protocols.io

Authors

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Amendments

4 Amendments to the protocol will be provided if necessary.

Support

5 No funding was acquired for this research.

Introduction

6 Craniosacral therapy is an osteopathic technique founded on the theory of cranial rhythmic impulse. This rhythmic movement can be utilized for diagnostic and therapeutic purposes by palpation and manipulation of the skull, spine, and associated connective tissues. Therapeutic benefit is likely due to action on the autonomic nervous system, specifically through the vagus nerve. Current literature on the neurophysiological effects of craniosacral treatment is extremely limited, which has contributed to controversy regarding the effectiveness of this technique. Due to this, heart rate variability (HRV) as a measure of cardiovascular stress and autonomic system activity is proposed as a tool to evaluate the neurophysiologic effects of craniosacral treatment.

7 In this study, we conduct a meta-analysis of the literature to determine the role craniosacral therapy may play on the neurophysiologic parameters of heart rate variability, high-frequency power and low-frequency power.

Methods

8 Heart rate variability data immediately before and after any craniosacral treatment technique will be collected.

A meta-analysis will be performed. Studies from 2004 and on will be used. Only studies in English will be used. The study will be started in 2024.

9 Google Scholar, PubMed, and ScienceDirect databases will be used.

10 The search term "Craniosacral therapy heart rate variability" will be used.

11 A shared document will be used to manage records of sources and data collected. This data will be transferred to Review Manager 5.4 for further analysis.

12 Seven independent reviewers selected studies in this research according to the following criteria.

Inclusion Criteria: Articles that reported high frequency (HF) and low frequency (LF) mean and standard deviation data immediately before and after any craniosacral treatment technique.

Exclusion Criteria: Studies that did not assess HRV data or immediately after craniosacral treatment were not used.

13 Data will be extracted from studies independently.

14 HRV data including High-frequency and low-frequency power means and standard deviations from pre and post craniosacral therapy were collected.

15 Outcomes: Determining the effect size of craniosacral therapy on HF and LF data using standardized mean differences.

16 Risk bias assessment: The NIH quality assessment of case-control studies tool, and DOI plot will be used.

17 HF and LF power means and standard deviations will be compared pre and post-craniosacral therapy. This data will be inputted into Review Manager version 5.4 to generate standardized mean differences for each study. These standardized mean differences will be pooled together and plotted on forest plots to assess the short-term effect of craniosacral therapy on HRV. I^2 will be used in consideration of heterogeneity.

18 The Grading of Recommendation, Assessment, Development and Evaluation (GRADE) system will be used in the evaluation of the strength of the body of evidence.

Current Research Stage

19 The current stage of research: planning and protocol creation.