

Dominance of the sympathetic nervous system in patients with fibromyalgia/chronic fatigue syndrome compared to healthy controls.

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Background & aims

A dominance of the sympathetic nervous system is hypothesized to play a crucial role in the etiology and perpetuation of functional somatic syndromes. However, literature on this topic is still inconsistent.

The aim of our study is:

To examine the physiology of the autonomic nervous system by measuring heart rate, skin conductance, and peripheral skin temperature in response to different stressors in patients with fibromyalgia/chronic fatigue syndrome and healthy controls.

Methods

Sample: Clinical records from outpatients seeking cognitive behavioral treatment at Tumi Therapeutics, recruited before COVID-19, were analyzed. Participant groups included patients with fibromyalgia/ chronic fatigue syndrome (n = 37) and healthy controls (n = 30).

Procedure: Patients with fibromyalgia/chronic fatigue syndrome (n=26) and HC (n=30) went through a stress test consisting of a baseline phase (120s), the STROOP color word task (120s), a recovery (120s), a mental arithmetic task (120s), a recovery (120s), a stress talk (120s) and a recovery (120s). Heart rate, skin conductance, and peripheral skin temperature were monitored continuously during all phases.

Analyses: Random intercept random slope linear mixed model analyses were performed on the different phases.

Results

Figure 1.

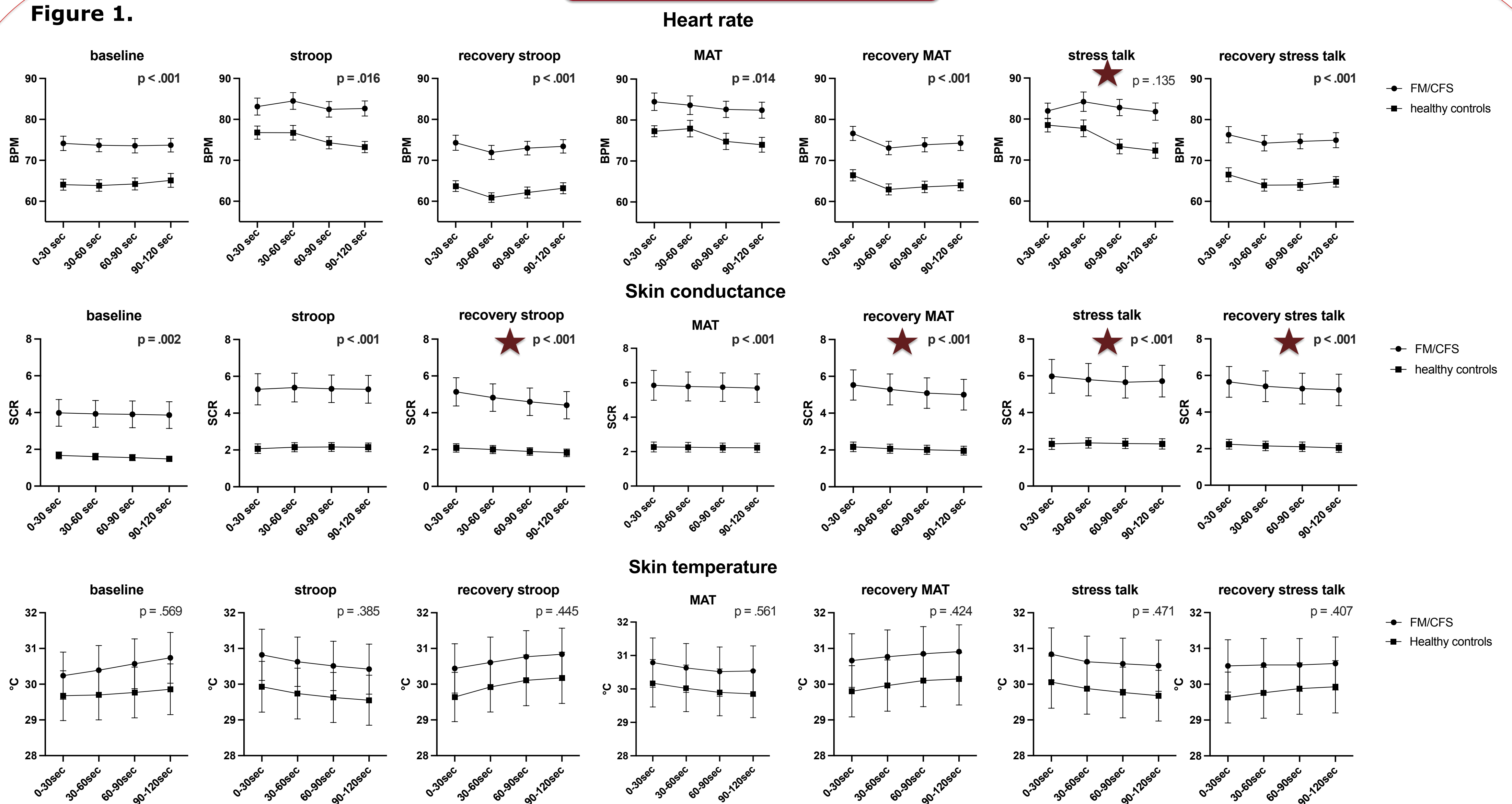


Figure 1. Graphic representation of the mean heart rate, skin conductance and peripheral skin temperature, respectively expressed in beats per minute (BPM), skin conductance response (SCR), and degrees Celcius (°C) for each time segment, expressed in seconds, during a baseline phase, the STROOP color word task, a recovery, a mental arithmetic task (MAT), a recovery, a stress talk and a recovery. P-values refer to the main effects of group. Vertical bars denote standard error of the mean.

★ Significant time*group interaction effect

Conclusion

- Patients had a significantly higher heart rate during all phases, except during the stress talk, compared to healthy controls.
- Patients had significantly higher skin conductance compared to healthy controls during all phases.
- No significant differences were found between patients compared to healthy controls regarding peripheral skin temperature.

Our results showed a dominance of the sympathetic nervous system in patients with fibromyalgia/chronic fatigue syndrome compared to healthy controls, suggesting the presence of autonomic nervous system dysfunctionalities as an underlying working mechanism for fibromyalgia/chronic fatigue syndrome.