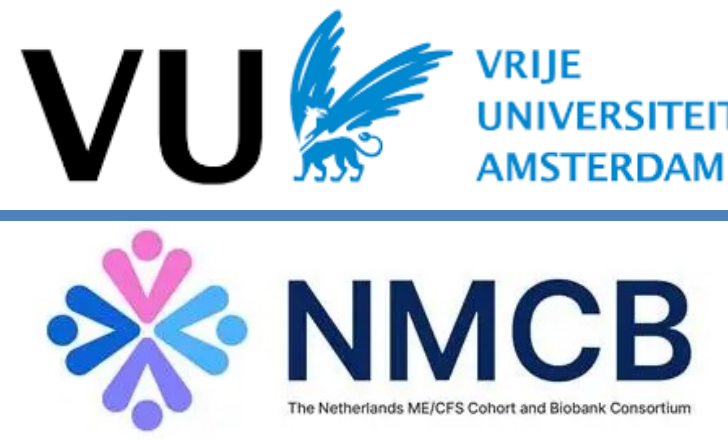


Symptom prevalence and heart rate changes during NASA Lean testing in Post-Acute Infection Syndrome patients

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Background

- Orthostatic intolerance, the inability to tolerate an upright position, affects over half of all people with Post-Acute Infection Syndromes, such as Myalgic Encephalomyelitis/Chronic Fatigue Syndrome and Long COVID. It significantly impacts both quality of life and disease severity and is linked to autonomic dysfunction. [1,2]
- Supine-to-stand tests, like the NASA Lean Test, are standard practice for the diagnosis of orthostatic intolerance phenotypes such as Postural Orthostatic Tachycardia Syndrome (POTS) or Orthostatic Hypotension (OH), by observing the hemodynamic changes that occur while patients stand up.
- However, symptomatic responses during testing and during daily activities may occur independently of hemodynamic criteria used to define orthostatic intolerance phenotypes. [3]

Aim of study

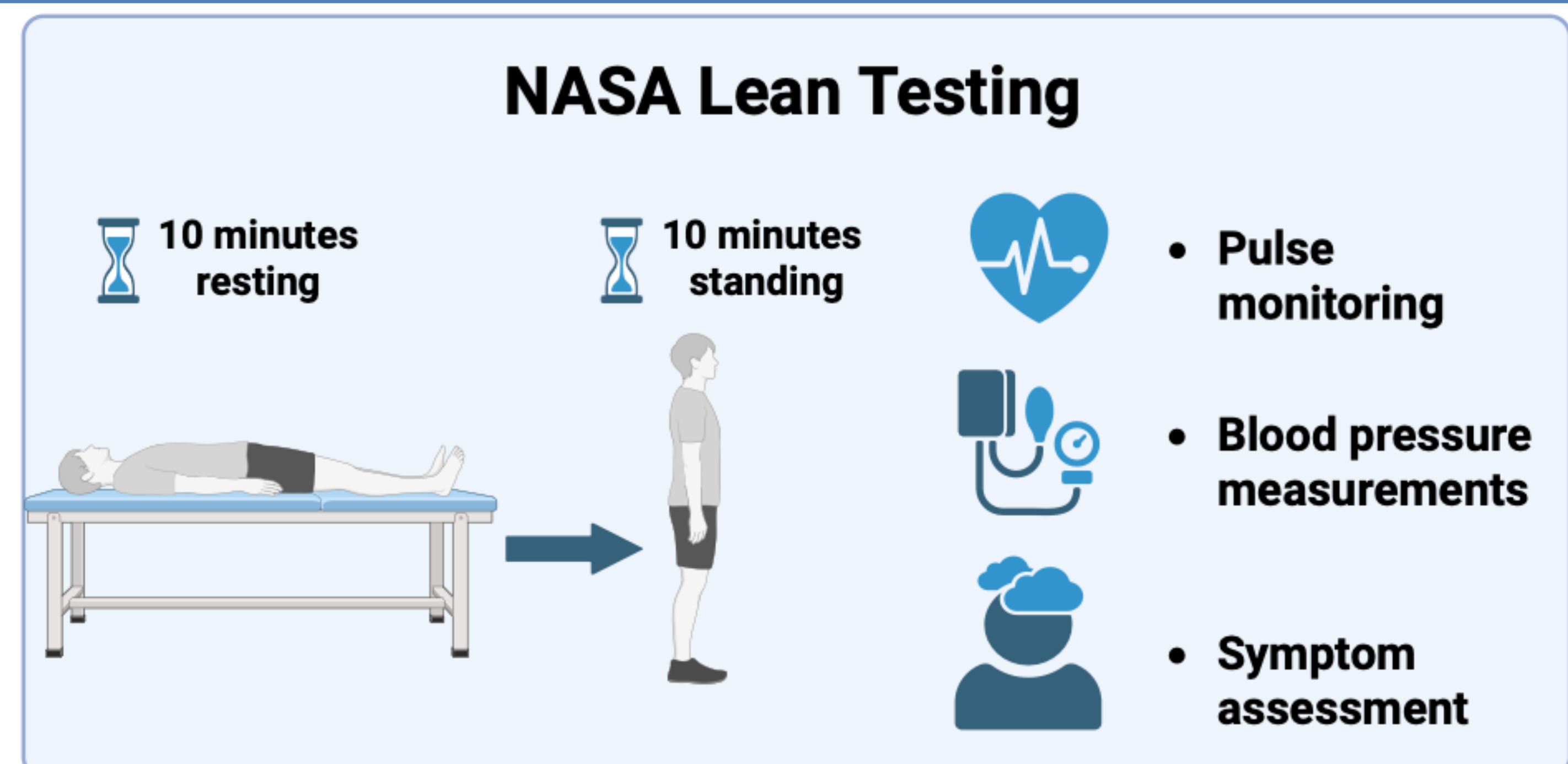
To compare heart rate and symptom responses during NASA Lean testing and in daily life between healthy controls and Post-Acute Infection Syndrome patients.

Methods

Healthy controls (n=55), ME/CFS (n=48) and Long COVID (n=64) patients all underwent NASA Lean testing as a part of standard NMCB inclusion.

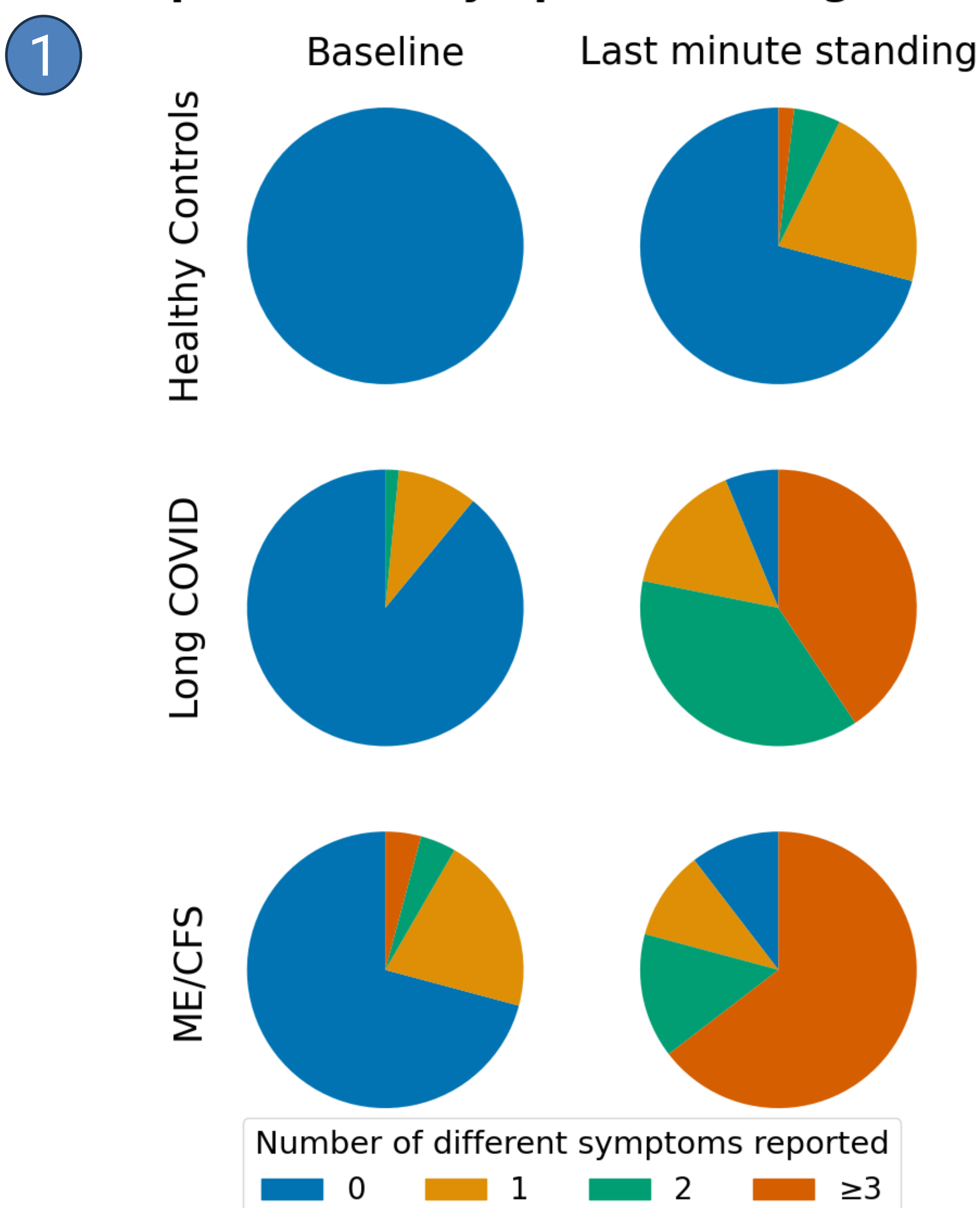
Outcome measures:

- Number of different symptoms reported during testing
- Heart rate difference (maximal heart rate standing – supine heart rate)
- Orthostatic intolerance score of the COMPASS-31 (Composite Autonomic Function questionnaire)

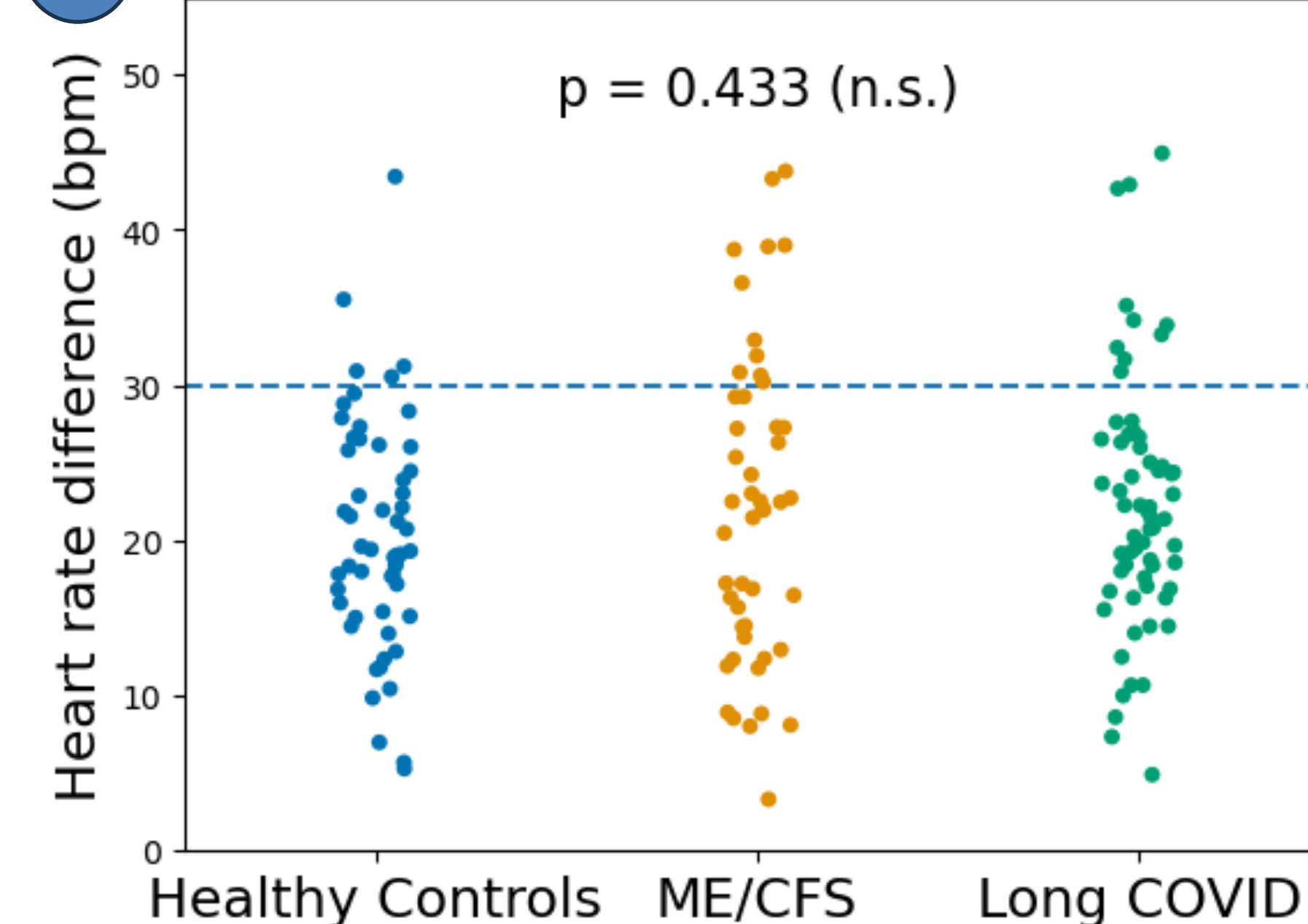


Results

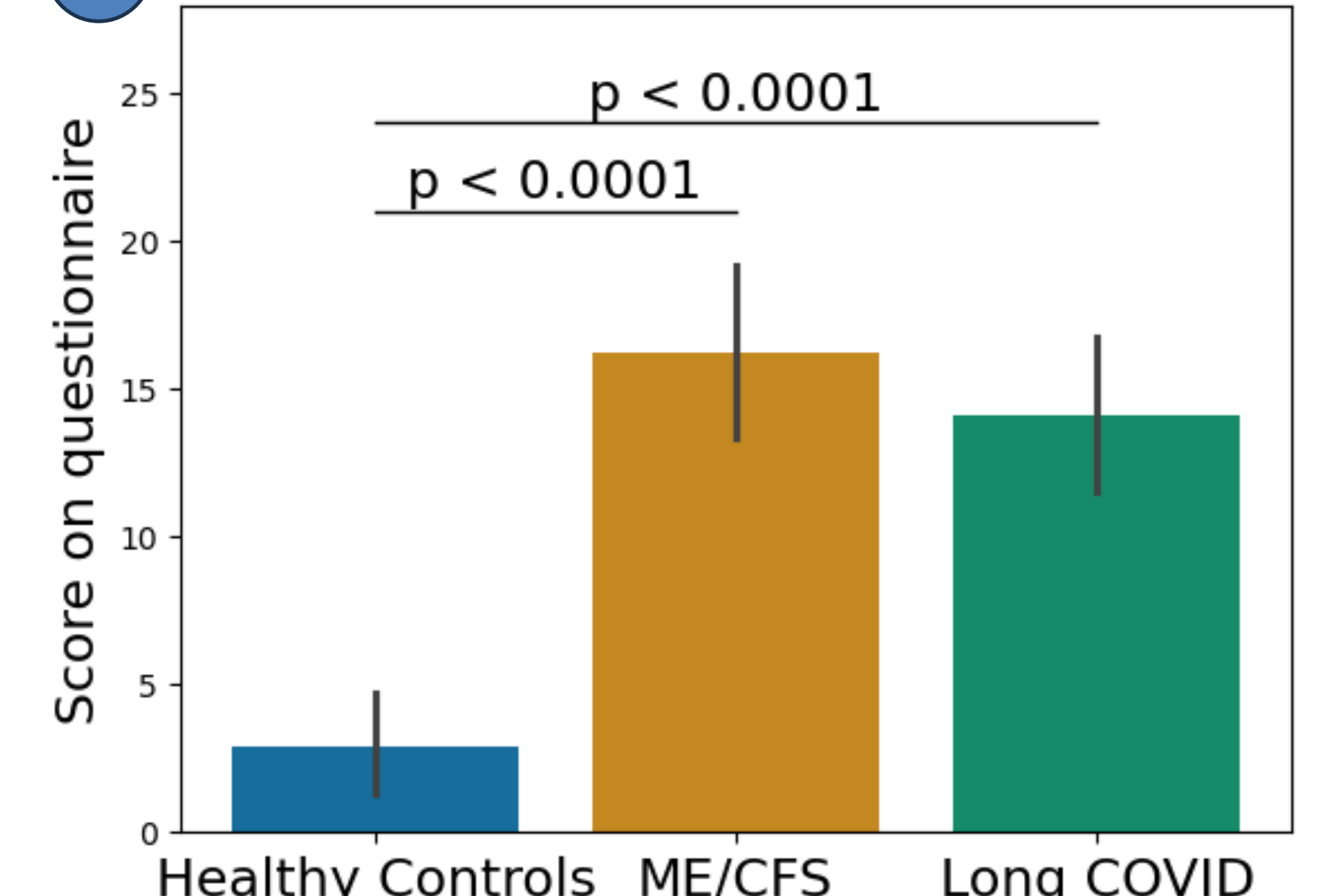
1 Participants with symptoms during NASA Lean



2 Heart rate change after standing up



3 COMPASS-31 Orthostatic Intolerance



1 The proportion of patients reporting symptoms during the last minute of testing is larger than healthy controls.

2 No significant difference in heart rate difference was observed between healthy controls and patients. However, a greater proportion of patients exhibited a ≥ 30 bpm increase (POTS criterion).

3 The autonomic symptom burden of orthostatic intolerance as assessed by the COMPASS-31 is significantly higher in both ME/CFS and Long COVID patients with no significant differences between the two patient groups.

Conclusion

Despite similar heart rate responses during NASA Lean testing, Post-Acute Infection Syndrome patients report more symptoms both during testing and in daily life, suggesting that current hemodynamic criteria may not fully capture the orthostatic intolerance of this population.