

Feasibility of Using Vibroacoustic Gamma Stimulation in Advanced Dementia Contexts

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Introduction

- Agitation and aggression are common in persons with dementia¹. Behavioural and psychological symptoms of dementia (BPSD):
 - Reduce quality of life
 - Increase rate of disease progression
 - Increase burden on families and healthcare systems².
- Frequency of BPSD can be attributed by factors such as:
 - Limited cognitive capacity
 - Decreased ability to cope with stressors
 - Impaired communication.
- Non-pharmacologic interventions are suggested as the first line treatment for BPSD and improve the options of effective treatments in the real world.
- Rhythmic sensory stimulation (RSS) is a non-pharmacological approach to treating BPSD:
 - Presumed mechanism of RSS is to induce 40Hz oscillatory patterns in neural activity to improve brain functioning³.
 - Animal research suggests that RSS can alter neurophysiological and cognitive outcomes^{4,5,6}.
- RSS potentially improves cognitive function in persons with Alzheimer's disease⁷.



Source:
<https://unsplash.com/photos/NIHGKAZ3IC>

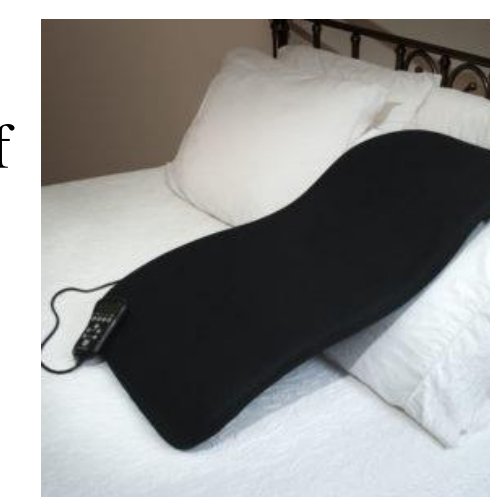
Methodology

Participants

- A sample ($n = 5$) of participants with severe BPSD, who were diagnosed heterogeneously (e.g. Alzheimer's disease, frontotemporal dementia, Lewy body dementia).
 - Eligibility:** Diagnosis of dementia; Presence of severe and/or frequent BPSD (e.g. verbal and physical aggression)
 - Exclusion:** Pre-existing medical conditions that contraindicated RSS (e.g. ergogenic aids, continuous analgesic use)
 - Ethical considerations:** Recruited participants had an assent to participate. Consent for participation was obtained from the Power of Attorney of the prospective participant.

Materials

- Vibroacoustic Chair System (VTS-1000, Sound Oasis, Marblehead, MA)** used for RSS.
 - Audio stimulation:** Energize, Relax, Sleep, or Stress Relief
 - Vibrotactile stimulation:** 1 (lowest) through 20 (highest)



Source:
<https://www.soundoasis.com/vibroacoustic-therapy-back/>

Procedures

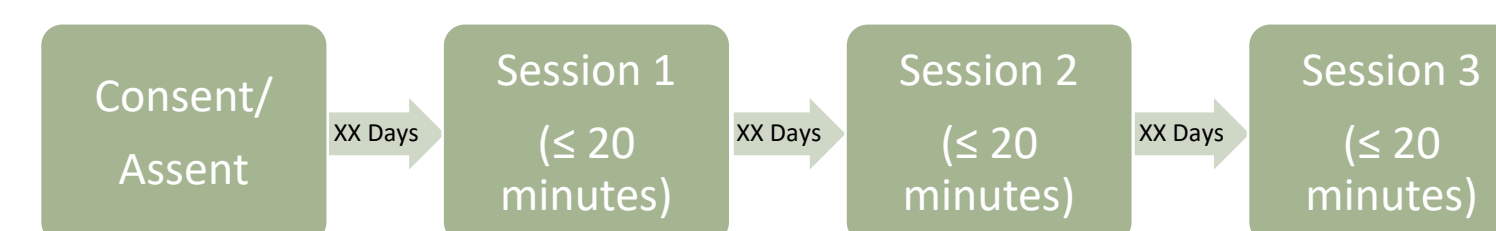


Figure 1. Procedure outline of the study

Effect of Akathisia

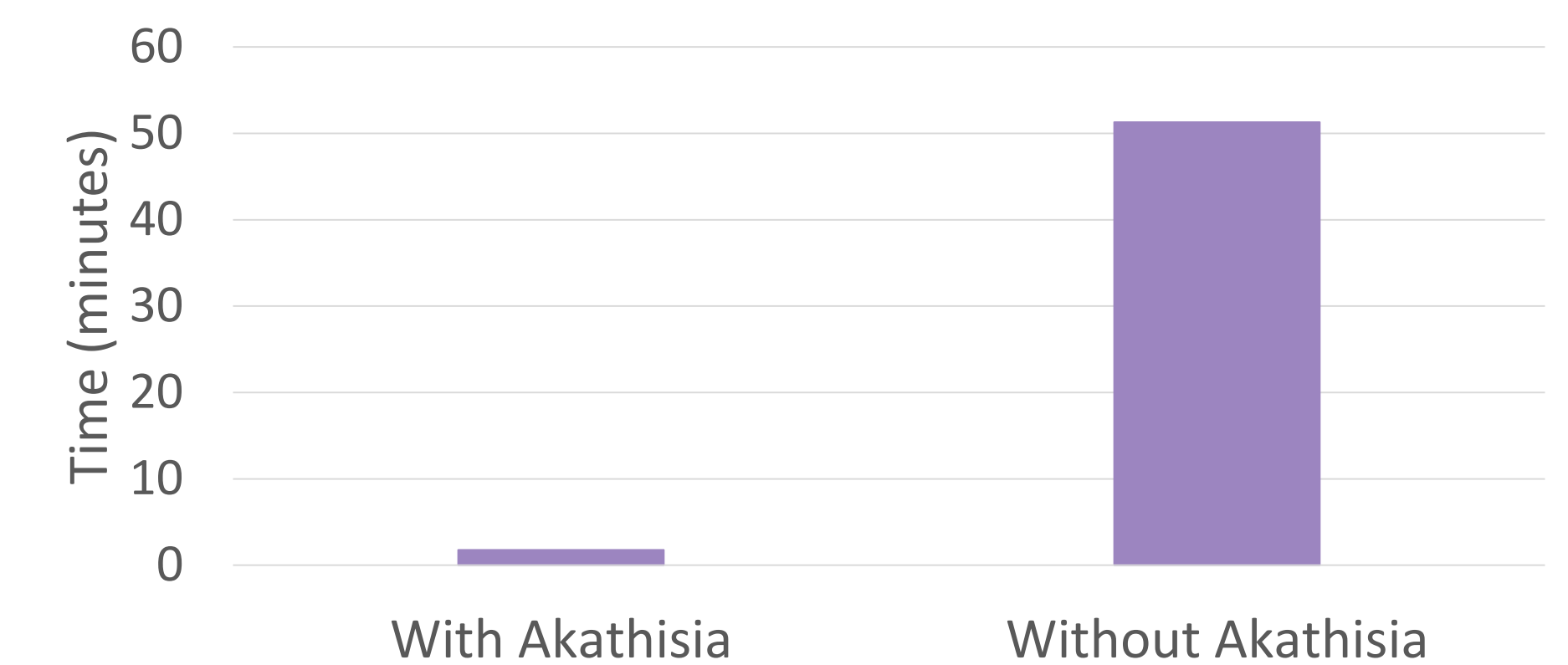


Figure 3. Average time remained engaged with RSS to the presence of akathisia

Measures

- Baseline qualitative descriptions:** At baseline, all participants exhibited frequent and/or severe BPSD, in keeping with eligibility for admission to inpatient treatment.
- Tolerability (qualitative):** No adverse events or significant increases in BPSD (e.g., physical aggression) were observed during the intervention.

Discussion

- Results demonstrated that an RSS intervention using a portable RSS device would be a feasible intervention for BPSD in individuals without akathisia.
- Controlled trials with large samples are justified and will inform the clinical efficacy of RSS in decreasing BPSD in this population.

Objectives

- This study tested the feasible use of a portable RSS device on a sample of older adults with severe BPSD receiving treatment in an inpatient hospital unit.
- The tolerability of the RSS device was examined, as indicated by the ability of remain on the device for up to 20 consecutive minutes, for a minimum of 3 sessions.

Results

Tolerability of interventions

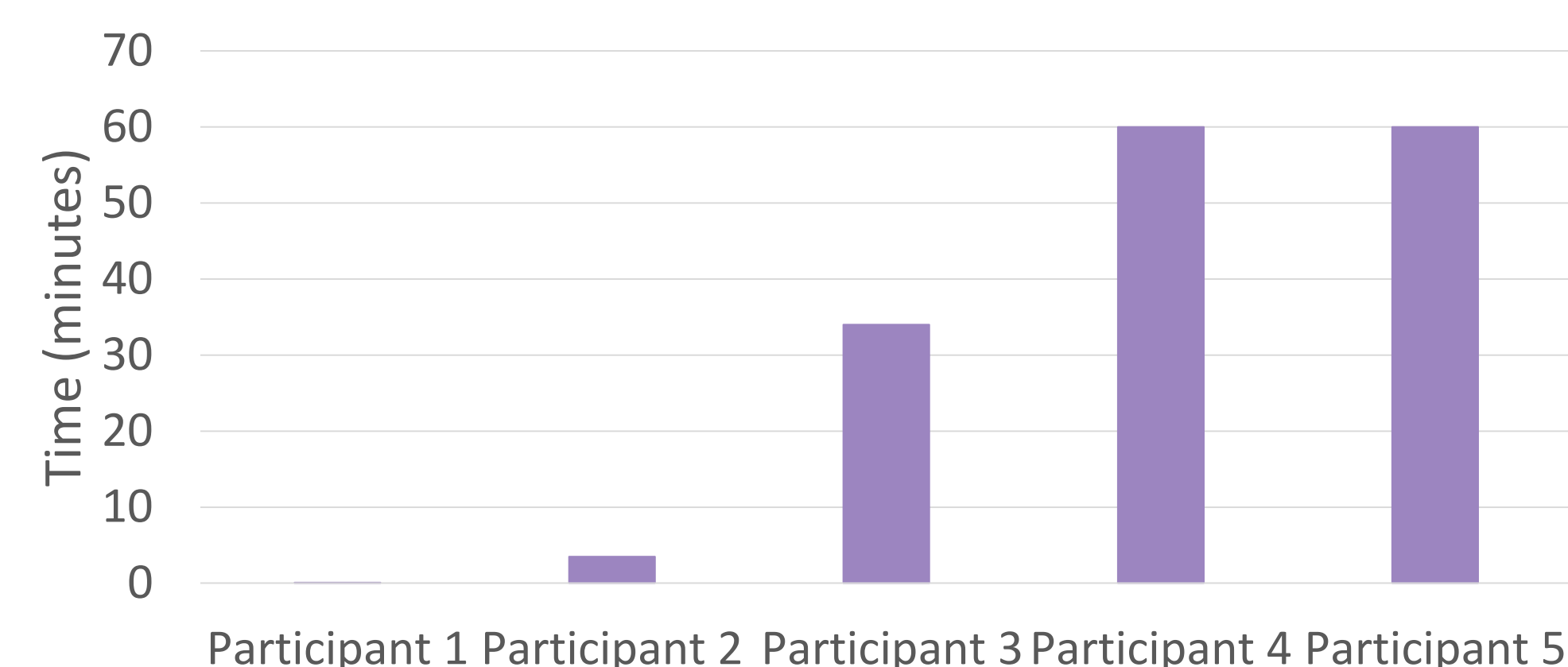


Figure 2. The total time in which participants remained seated in the chair.

References

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