

Effects of Virtual Nature Interventions on Heart Rate Variability – A Case of Eskoo Clients

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Participants

- 7 residents of Eskoo's Support and Care units.
- Participants with physical and/or intellectual disability.
- Individual profiles:

Participant ID	Mobility Arrangement	Behavioral Symptoms
EC01	Bedbound	Mostly calm, attentive in dome
EC02	Bedbound	Mostly calm, attentive in dome
EC03	Bedbound	Mostly calm, attentive in dome
EC04	Uses wheelchair	Active during the day, attentive in dome
EC05	Uses wheelchair	Attentive in dome with occasional fearfulness, slightly restless on chair
EC34	No mobility device	Often restless and agitated, calms in dome
EC36	No mobility device	Often restless and agitated, calms in dome

Methods and Hypothesis

Methods:

- Intervention: VR nature interventions at the dome facility
 - Mean session duration: 38.5 mins (range: 15-120 mins)
- HRV Data collection: Continuous HRV measurement with focus on RMSSD, HR
- Design: Comparison between intervention mean and daily average of RMSSD and HR

Hypothesis:

- Virtual nature interventions would lead to measurable changes in participants' HRV and HR relative to their daily averages
- The direction and magnitude of these changes would depend on each participant's cognitive and physical profile.

What is RMSSD?
Reflects short-term
HRV and
parasympathetic
activity (rest & digest)

Key Results-1

- **Comparison of daily mean and intervention mean**
 - RMSSD: Statistically significant decline in interventions (see Figure 1)
 - HR: No statistically significant change

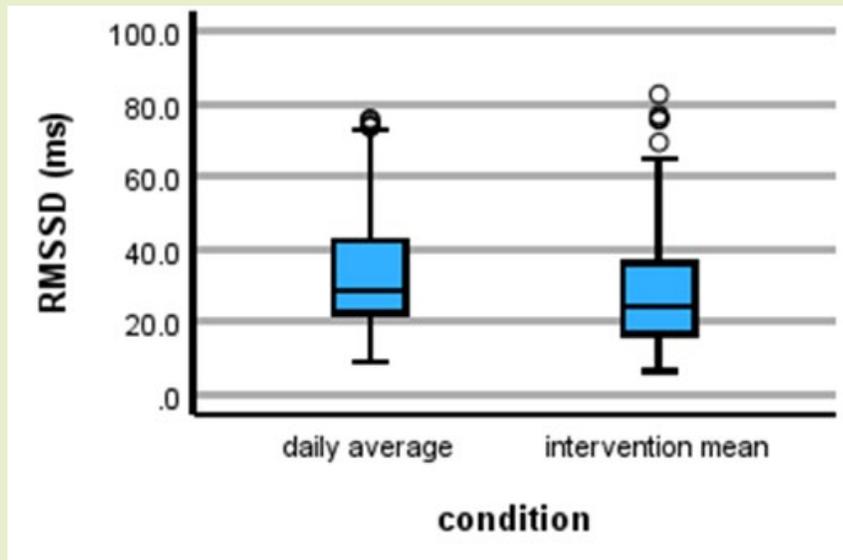


Figure 1: Mean RMSSD scores across participants

RMSSD

- Daily mean: **35.69 ms**
(N = 45, SD=19.59)
- Intervention mean: **31.31 ms**
(N=45, SD=21.74).

Paired T-Test supports the significant change ($t(44) = 3.60, p < .001$ (two-tailed).)

Key Result-2

- **Individual descriptive analysis**

- RMSSD decrease and HR increase (EC01, EC02, EC03, EC05)
 - Increased cognitive engagement or emotional stimulation
- RMSSD decrease and HR decrease (EC34, EC36, (EC04))
 - Increased cognitive engagement and calming effects

No uniform autonomic responses



Participants' profiles (mobility, disability) result in different reactions towards interventions

Thank you!

