Introduction

- The relaxation response involves a decrease in heart rate (HR) and an increase in heart rate variability (HRV) (Dusek & Benson, 2009).
- HRV (the variation in the time interval between heartbeats) is a non-invasive measure of autonomic nervous system function and is seen as a marker of mental and physical well-being (Billman, Huikuri, Sacha, & Trimmel, 2015).
- Recent evidence suggests that both music therapy (MT) and HRV biofeedback (BF) interventions are effective in treating stress-related symptoms and promoting relaxation (Ellis, Koenig, & Thayer, 2012; Lehrer, Woolfolk, & Sime, 2007).
  - The therapeutic use of slow rhythmical breathing is an appropriate link between the two approaches.
  - Therefore, the objective of the present study was to evaluate the psychophysiological relaxation effects of a combined MT/HRV BF intervention.

Methods

- 60 apparently healthy adults (M = 27.65, SD = 8.56) were randomized to either the experimental group (EG) or the control group (CG).
- In the EG, the intervention consisted of musically guided breathing at about 0.1Hz (6 breaths/minute). The music therapist received cardiorespiratory feedback and used a monochord and the voice to signal inhalation and exhalation.
- The CG listened to “Peaceful Journey”, a piece of relaxation music composed by Jonathan Goldman.
- Outcomes were mean HR and HRV as well as visual analogue scales (VAS) of relaxation and general well-being.

Table 1: Procedure Overview with measurement time points

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<th>Minutes</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
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<td>HRV 1</td>
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<td>HRV 4</td>
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<td>VAS 3</td>
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</tbody>
</table>

Results

- Mean HR increased during task and decreased below baseline level during intervention, showing a main effect of time, $F = 50.26, p < .001$.
- Besides a main effect of time, HRV (indicated by RMSSD) also showed a significant interaction effect, $F = 6.60, p = .001$ (s. Figure 1).
- VAS “general well-being” showed both a significant main effect of time, $F = 74.78, p < .001$, and a significant interaction effect, $F = 4.07, p = .028$ (s. Figure 2).
- VAS “relaxation” showed a comparable progression, but without significant interaction.

Conclusions

- Both interventions resulted in a relaxation response.
- Both cardiovascular and self-evaluatory results indicated a higher efficiency of the MT/HRV BF combination.
- Results suggested that the decreased respiration rate was the main factor for the changes in HRV.
- Using live played music to signal respiration was quickly understood and well-received by the subjects.
- Further research is required to investigate the effects of certain aspects of the intervention (e.g., live sounds vs. synthetic sounds).

References


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