

Effect of short-term restricted environment stimulation on perceived stress

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Abstract stress relief techniques, including the Chamber restricted environment stimulation technique (REST), are becoming increasingly popular in Slovakia. Given this, it is necessary to investigate this method in an experimental setting. According to Urbíš (2012), dark therapy could be a suitable method for people living under constant stress, tension, and difficult living conditions and can also be used as training in coping with stressful situations.

The focus of this study was to assess the relationship between a short-term Chamber REST and perceived stress. Our research sample consisted of 42 participants who participated in a three-hour stay in the laboratory of REST at Comenius University. Participants were psychology students. The selection of the research sample and length of stay was mainly based on the COVID-19 pandemic virus. The average age of the participants was 25 years ($SD = 5.63$). In terms of gender, 32 women (76.19%) and 10 men (23.81%) participated in the research. 21 respondents (50%) stated that they had some previous experience (not a one-time, but repeated) with relaxation techniques. 20 participants (47.62%) had no prior experience. We measured experienced stress using the Perceived Stress Scale (PSS, Cohen et al., 1983) two days before the stay and one week after, and stress and arousal using The Stress Arousal Checklist (SACL, Mackay et al., 1978) before and after stay.

The results show that the difference in perceived stress decreased significantly right after short-term Chamber REST ($p = 0.001$; $W = 556.00$) and even one week after the stay ($p = 0,016$; $W = 0,932$). There were no significant changes in the SDNN parameter before staying in the dark ($M = 65.46$, $SD = 53.79$) and after ($M = 73.57$, $SD = 31.14$) Wilk's Lambda = .939, $F(1,30) = 1.947$, $p = .173$. No significant changes are also in the rMSSD index before ($M = 62.45$, $SD = 66,42$) and after ($M = 70.57$, $SD = 43.80$) Wilk's Lambda = .961, $F(1,30) =$

1.214, $p = .790$; neither in HF before ($M = 3\,307.12$, $SD = 7\,524.92$) and after ($M = 2\,384.77$, $SD = 2\,934.18$) Wilk's Lambda = .995, $F(1,30) = .140$, $p = .711$. There was not a significant effect of gender, Wilk's Lambda = .991, $F(1,30) = .283$, $p = .599$ or previous experiences, Wilk's Lambda = 1.000, $F(1,30) = .001$, $p = .980$ on SDNN. We also did not observe a significant effect of gender, Wilk's Lambda = .996, $F(1,30) = .133$, $p = .717$ or previous experiences, Wilk's Lambda = 1.000, $F(1,30) = .014$, $p = .907$ on rMSSD. The same results are in the HF index, with no significant effects of gender, Wilk's Lambda = 0.985, $F(1,30) = .469$, $p = .499$ and previous experiences with relaxation methods Wilk's Lambda = 1.000, $F(1,30) = .000$, $p = .994$.

According to our expectations, staying in the dark should reduce the level of stress experienced. The results showed the statistical significance of the difference in the stress using PSS and SACL questionnaires scores before and after dark stay. Participants scored lower after their stay in the dark than before, which is in line with our expectations according to other authors (Malůš et al., 2016; Suedfeld & Borrie, 1999) and highlights the potential of Chamber REST to reduce the level of experienced stress. Based on HRV analysis, we conclude that there was a change in measured HRV indexes, however, the changes were not significant. We observed an increase in heart rate variability (SDNN, RMSSD) indicating an increase in parasympathetic tone, compatible with elevated relaxation. Gender factors and previous experience with relaxation methods have no effect.

In conclusion, we found the difference in perceived stress decreased significantly right after short-term Chamber REST and one week after the stay. An increase in heart rate variability (SDNN, RMSSD) after the stay indicated an increase in parasympathetic tone, however, the changes were not significant. There was no effect of factors of gender and previous experience with relaxation methods.

Keywords Chamber REST, Stress, Arousal, Relaxation Response, HRV.