Cortisol and Cardiovascular Reactivity and Habituation to a Virtual Reality Version of the Trier Social Stress Test

Jönsson, Peter H; Wallergård, Mattias; Österberg, Kai; Johansson, Gerd; Karlson, Björn

2009

Link to publication

Citation for published version (APA):

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

• Users may download and print one copy of any publication from the public portal for the purpose of private study or research:
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying the publication in the public portal

Take down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.
Cortisol and Cardiovascular Reactivity and Habituation to a Virtual Reality Version of the Trier Social Stress Test

AIM
Previously we have shown that a Virtual Reality (VR) version of the Trier Social Stress Test (VR-TSST) elicits automatic responses comparable to the real world TSST. Briefly, the TSST involves a speech and performance of a math task in front of an audience. In this pilot study we examined if repeated stress provocations with VR-TSST would result in the characteristic habitation of the cortisol stress response.

METHOD
7 healthy men were confronted with the VR version of TSST twice (one week between sessions). Salivary cortisol, heart rate (HR), high frequency heart rate variability (HF-HRV, parasympathetic activity) and T-wave amplitude (TWA, inversely related to sympathetic activity) was assessed. Data were analyzed with repeated measures ANOVAs, with DAY (first and second) and CONDITION (baseline, preparation, speech, math-task, and following rest) as within group factors.

DISCUSSION
Cortisol secretion showed a marked increase during the first stress provocation, but habituated in the second session. HR and TWA reactivity were similar during both sessions, implicating a stable increase in sympathetic activity during VR-TSST. The results closely resemble those obtained in prior studies using the real life TSST. If these results can be replicated with larger samples, the VR-TSST may be used as a simple and standardized tool for social stress induction in experimental settings.

RESULTS
Cortisol increased during stress at day 1, but not at day 2: DAY * CONDITION [F(6, 26) = 4.68, p < .05], quadratic trend [F(1, 6) = 6.96, p < .05]. HR and TWA did not differ between day 1 and 2. Main effects of CONDITION for HR [F(8, 48) = 19.28, p < .0001] and for TWA [F(8, 48) = 12.81, p < .005]. HR increased [cubic trend F(1, 6) = 36.72, p < .005]; TWA decreased [cubic trend F(1, 6) = 14.36, p < .005]. HF-HRV n.s.