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Active Music Therapy Instrument Selection

Physiological Correlates of Active and Passive Music Therapy Interventions

Major depressive disorder (MDD) can be treated with music therapy (MT), a cost-effective, accessible, and holistic treatment option. Dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and autonomic nervous system (ANS) have been implicated in MDD. Passive MT—listening to music, and active MT—engaging in music, have been shown to modulate stress hormone levels and heart rate variability (HRV), physiological correlates of the HPA axis and ANS, respectively. However, these interventions and their physiological correlates have yet to be directly contrasted. In this study, we compared the effects of active and passive MT on physiological systems known to be aberrant in patients with MDD. Healthy participants (N=16) participated in both active and passive 40 minute MT intervention sessions on separate days spaced at least one-week apart. Data were collected both before and after each intervention session. The high frequency component power (HF) and the low frequency component divided by the high frequency component power (LF/HF) were calculated from a frequency domain analysis of HRV—known correlates of parasympathetic and sympathetic ANS activation, respectively—were calculated, and saliva samples were analyzed for alpha-amylase and cortisol, endocrine indicators of the sympathetic ANS and HPA-axis, respectively. We found that active MT increased HF power, decreased LF/HF power, and reduced salivary cortisol levels, preferentially modulating the ANS and HPA-axis to a calmer physiological state less associated with depressive symptoms. By contrast, passive MT increased LF/HF power (greater sympathetic ANS activation), inducing a state associated with depressive pathology. These results indicate that active MT preferentially targets the ANS and HPA-axis and may be used to modulate depressive pathophysiology.