



Can Behavioral Countermeasures Modulate the Risk of Stress-induced Altered Immunity and Latent Virus Shedding?

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Stress-relieving Behavioral consequences: countermeasure: Negative changes to sleep **VR** meditation architecture Increase in self-reported stress & negative affect **Immunological** consequences: Dysregulation of immune cytokine **Neuroendocrine** College **Stressors:** activity Students/ Circadian misalignment consequences: Altered immune Increased stress Academic stress Firstactivity in oral mucosa hormone production responder Occupational stress (i.e. slgA) (i.e. cortisol) students Increased latent viral reactivation & shedding (i.e. EBV, VZH, HSV-1, CMV) **Autonomic consequences:** Altered cardiovascular reactivity (e.g. changes in **Stress-relieving** resting heart rate) countermeasure: Altered autonomic activation **VR** meditation (i.e. alpha amylase) **Figure 1:** Virtual reality stress-relieving countermeasures in college students and first responders project overview

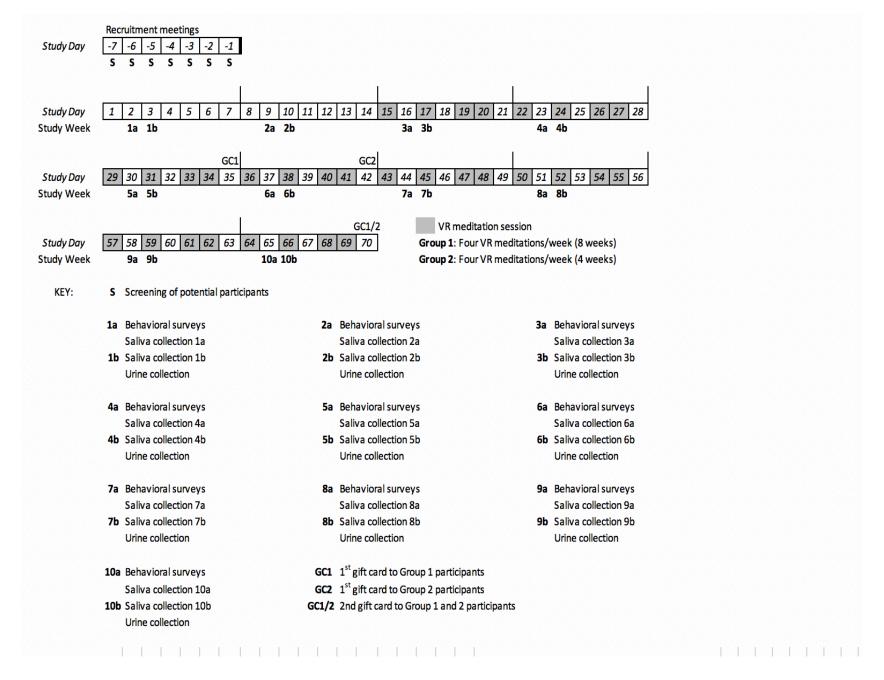


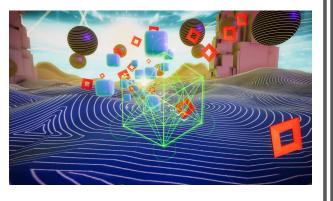
Figure 2. Fall 2020 and Spring 2021 Schedule of Events

Stress-relieving Behavioral consequences: countermeasure: Negative changes to sleep **VR** meditation architecture Increase in self-reported stress & negative affect **Neuroendocrine** College **Stressors:** Students/ Circadian misalignment consequences: Increased stress Academic stress Firsthormone production responder Occupational stress (i.e. cortisol) students **Autonomic consequences:** Altered cardiovascular reactivity (e.g. changes in resting heart rate) Altered autonomic activation (i.e. alpha amylase) Figure 1: Virtual reality stress-relieving countermeasures in college students and first responders project overview

Immunological consequences:

- Dysregulation of immune cytokine activity
- Altered immune activity in oral mucosa (i.e. slgA)
- Increased latent viral reactivation & shedding (i.e. EBV, VZH, HSV-1, CMV)

Stress-relieving countermeasure: VR meditation







Oculus Quest 1 and 2



Oculus Quest 1 and 2



TRIPP Software

Virtual Reality Stress-Relieving Countermeasure

20 minutes at least 4 times a week

Significance



