Barton Journal

Video Games and their Effects on Heart Rate and Heart Rate Variability

CONFERENCE ABSTRACT

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CITATION

Goldschmidt, Colby; Biscardi, Lauren; & Ottinger, Charlie. (2026). Video games and their effects on heart rate and heart rate variability [Conference abstract]. *Barton Journal, 1*(1), 223–224. https://bartonjournal.org/vol-1-no-1/2026-cat4-article-no-052

Abstract

Heart rate variability (HRV) measures the fluctuation of time intervals between heartbeats and is used to indicate how the body manages stress, recovery, and general cardiovascular health. High HRV can indicate good fitness or physical recovery, while low HRV can indicate high stress, fatigue, or illness. This study evaluates whether a competitive Fortnite Reload game impacts players' heart rates and heart rate variability. Fifteen participants on the Barton College Esports team were split up into three groups of five (beginner, intermediate, or expert) based on experience level. Each person was assessed wearing a Zephyr monitor that allowed their respiration rate, heart rate, and HRV to be monitored during Fortnite Reloaded gameplay. Heart rate was measured at rest, then the active heart rate was measured after they performed 20 pushups. During gameplay, their RR, HR, and HRV were recorded during kills, deaths, and at the outcome (win/loss). One-way ANOVA was used to compare outcomes between skill levels. Alpha was set at .05. Expert and intermediate players had more total kills than beginners ($p = .003$). No significant differences were observed in HR, RR, or HRV between skill levels during kills, deaths, or outcome ($p > .05$). Active HR was higher than gameplay HR ($p < .001$). According to the data, a game of Fortnite Reloaded caused a physiological stress reaction less than what

occurs during moderate exercise. Experience level had no impact on the RR, HR, or HRV of players during gameplay. It also showed that experience levels affect gameplay skills. This shows that while not as physically taxing as exercise, video games, specifically Fortnite Reload, do have physiological effects on the body.

Keywords: heart rate variability, cardiovascular health, Fortnite Reload, stress