

Effects of whole-body vibration on reproductive physiology in a rat model_Dataset

Introduction

Workers in a number of sectors including Transportation, Warehousing and Utilities, Construction, Agriculture, Forestry's and Fisheries and Mining are regularly exposed to whole-body vibration (WBV) while driving large transportation or earth moving vehicles or while using large vibrating tools such as chain saws or rock drills. Exposure to WBV has been associated with an increased risk for neck and back pain. However, the findings of other studies have suggested that occupational exposure to WBV may also serve as a risk factor for the development of a number of diseases such as cardiovascular disease and cancer. In addition, it may result in pre-term births and preclampsia in women and interfere with normal reproductive physiology in both men and women.

Methods

- **Animals.**
 - Male and female Sprague-Dawley rats ([H1a: (SD) C57BL/6J, approximate body weight of 200 – 230 g at arrival.
 - Obtained from Hilltop Lab Animals, Inc. (Scottsdale, PA).
 - Rats were housed in pairs under controlled light cycle (12 h light/12 h dark) and temperature (22 – 25 °C) conditions and were provided tap water and food *ad libitum*.
- **Exposure System.**
 - Platforms with restrainers and accelerometer were attached to the shakers.

- The restrainer, platform and shaker were all placed in a sound attenuating chamber.
- A laser vibrometer was used to measure both the response of the restrainer and of the platform between 10 and 100 Hz at 0.3 g; The platform and restrainer were stable up to 100 Hz.
- WBV exposure: 31.5 Hz, 0.3 g for 4 h/day for 10 consecutive days.
- Restraint-control: placed in non-vibrating restrainers for a specific amount of time.
- **Monitoring Estrous (Reproductive cycles).**
 - Estrous cycles were monitored in females by performing vaginal lavage.
 - Lavage was performed every day for 2 weeks prior to beginning the exposure and during the exposure.
 - Lavage fluid was placed on a slide, allowed to dry, stained with toluidine blue and the main cell type was identified
- **Measures**
 - A link to the detailed methods and measures collected can be found below.
 - ELISAs were used to measure hormone levels in serum
 - Reactive oxygen species were measured by using fluorescent dyes.
 - aRT-PCR and Western blot analyses were used to measure transcript and protein levels of biomarkers of dysfunction.

Citation

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