A Study of Biodynamic Response of Setting Pregnant Woman Exposure to Vertical Vibration on Vehicle

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ABSTRACT

The transmission of vehicle vibration to the body may reduce comfort or have an adverse effect on pregnant women or fetuses. In this study, Muksian's six degree of freedom lumped-parameter model of seated human body is adopted to study the biodynamic response of the seated pregnant women with the variations of body mass due to pregnancy on Baumal and Bouazara's vehicle suspension systems on random road. It is found that the pregnant women and the human could accept this vibration environment when vehicle is driven down a smooth road, and the transmission of vehicle vibration to the pregnant women may creat potential health risk when the vehicle is driven down a bad road. According to present data, the pregnant women are at greater risk than the normal human body when vehicle is driven down the roads. In addition, this study supposes eight various seats to compare the biodynamic response of the seated pregnant women on those seats. It is found that the transmission of vehicle vibration to the seated pregnant women will reduce 30% when sitting on the high damper seat on Bouazara's vehicle suspension system. But the transmission of vehicle vibration to the pregnant women will make potential health risk when vehicle is driven down a bad road. These results will be employed as a useful reference to improve safety for pregnant women and fetus in vehicles.

Keywords : Biodynamic Response, Pregnant Women, Vibration, Suspension System

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