

Effect of High Frequency Vertical Vibration on Ride Comfort

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To develop a more suitable method of evaluating ride comfort of high speed trains in Japan, a fundamental study was conducted on sensitivity of passengers to various frequencies of vertical vibration with respect to ride comfort. Experiments were performed using an electrodynamic vibration system that can generate vibrations in the frequency range of 1 to 80 Hz. The experiments were repeated with several different posture situations of subjects, for example, using armrest or not, with eyes opened or closed and so on. The shapes of threshold vibration curves with different posture situations were very similar to each other and the results indicated that the subjects tend to experience greater discomfort when exposed to high frequency vibrations than that presumed by the conventional Japanese ride comfort assessment method, the "Ride Comfort Level (RCL)." We proposed a new RCL revised based on the results of the experiments and confirmed that the new RCL method was more suited to the sensitivity of passengers with respect to ride comfort than the basic RCL method on the experiments using a real train.