عنوان مقاله:

Evaluation of Optimized Lumped-Parameter Models of Seated Human Body Exposed to Vertical Vibration

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خلاصه مقاله:

Biomechanical modelling of human body has been of great importance in industry, since human body is vulnerable to vibration and chronic exposure to vibration is the culprit behind a great deal of illnesses. biomechanical modelling is based on experimental data and the aim is to create a design basis for vehicles and other stuff in contact with human body. In the present article, information about 3 independent lumped-parameter models and some models which were result of multi-objective op-timization of independent models, are gathered and analysed. Multi-objective optimization is a novel approach, usually deploying genetic algorithms and results of analyzing models in this study suggest that optimization does not necessarily mean improvement. In this study, we numerically simulated above-mentioned models and validated their fitness to experimental data. Final results have proven that 7 degrees of freedom model proposed by Marzbanrad and Afkar is the best fitted model and can be used in industry as a basis for study of human body exposed to random vertical vibration with an almost realistic accuracy

کلمات کلیدی:
biomechanics; vibration; lumped-parameter model; optimization