

Ergonomic evaluation of a folding bike design using virtual environment modelling

Erlinda Muslim, author

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Abstrak

The purpose of this paper is to evaluate the ergonomics aspects of the first prototype of a folding bike designed by the Department of Mechanical Engineering, University of Indonesia (DME UI) in a virtual environment. Posture Evaluation Index (PEI) is used as an analysis approach that integrates the results of three methods: Low Back Analysis (LBA), Ovako Working Posture Analysis System (OWAS), and Rapid Upper Limb Assessment (RULA). The determine the optimal design configuration of a folding bicycle based from an ergonomics perspective. For male and female riders, the optimal configuration is obtained when the height of the handlebar is 32 cm and the height of the saddle is 83 cm. This study proved that a virtual environment could strengthen the ergonomics evaluation, especially in posture condition exploration.