

Sl No	Particulars	
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3	PhD Thesis Title	Investigation of the effects of the Posture and Vibration on the Heart rate during motorcycle riding in Indian context
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	University /Branch	University of Mysore (Electronics, Area: Ergonomics)
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7	<p><u>Brief synopsis</u></p> <p>Transport, in particular motorcycle, has taken a prime place in modern life. At the same time, patient rate is growing at 14% per year. Amongst the health problems, cardiovascular diseases are playing a major role. Heart rate is a good indicator of the health of the human body. Hence, the present study investigates the presence of any relation between the use of motorcycles and heart rate in particular. The investigation focused on two major parameters of riding, i.e., posture and vibration.</p> <p>In surveys, motorcycle respondents rated heart disease more than respondents who use the public transport vehicle. In overall, above 50% of the respondents of both surveys felt that either vibration or posture is the important parameter responsible for their ill health. The preferred healthy postural angle of riding position was stated to be between 60° and 90° by rider respondents.</p> <p>Experiments revealed that average relative heart rate (ARHR) is more at trunk inclination of 60° and also at 105° compared to 90°. Finite element modeling and analysis (FEMA) also showed that Vms is more at trunk inclinations of 60° and 105° compared to 90°.</p> <p>Also, experiments revealed that ARHR has a high correlation with hand arm vibration (HAV) and whole body vibration (WBV) average accelerations. However, magnitudes of HRs are more sensitive to variation of HAV ave acceleration than variation of WBV ave acceleration. In FEMA, it was noticed that the increase in any one of either HAV or WBV forces increases Vms. However, magnitudes of Vms are more sensitive to variation of HAV force than variation of WBV force.</p> <p>The present research work proposes rider's posture around 90° trunk inclination with provision for mobility. The dangerous limits of HAV and WBV accelerations were calculated in order to observe the safety standards while riding. Suggestions have been made in the thesis to the manufacturers of motorcycle to incorporate necessary design changes to reduce both WBV and HAV with top priority to be given to reduce or eliminate HAV. It is also suggested that riders perform relevant yoga exercises to overcome the ill effect of riding on HR.</p>	

