

Title : Ergonomic Risk Assessment and Postural Analysis of Indian Auto-Rickshaw Drivers using RULA and REBA

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Keywords: RULA; REBA; Ergonomic Risk Assessment; Auto Drivers

Introduction

Even today, many auto-rickshaw used in India are similar in design of the Piaggio Ape C from 1956, based on the Vespa. With a population over 1.2 billion people, a huge market for these auto-rickshaws exists in India. The objective of this research is to assess the ergonomic risks associated with Indian auto-rickshaw drivers and suggest necessary modifications and improvements for the development of a new hybrid auto-rickshaw that is better suited ergonomically for its drivers.

Methodology

The ergonomic risk is measured by analyzing the different postures attained by drivers. The main tools that we have used for this purpose are RULA (Rapid Upper Limb Assessment) and REBA (Rapid Entire Body Assessment). A total of 25 drivers were interviewed for this purpose, all of them plying the Jadavpur 8B-Tollygunge Metro route.

Results

- A REBA score of 7-8 (considering different postures) signifies that there is a very high risk of developing a musculo-skeletal disorder.
- Assessment of ergonomic risks using RULA gave a score of 4-5 (considering different postures) which suggests that necessary changes must be implemented immediately.

Conclusion

Results obtained using the above methods indicate the same conclusion, i.e. the postures involved in driving should be changed immediately. So as to minimize the associated ergonomic risks, a host of modifications were suggested in the design of auto-rickshaws. The scores of RULA and REBA, computed after implementing the said modifications in the simulated model generated using JACK- 8.0.1 showed that the ergonomic risks had been reduced considerably.