

**A STUDY ON THE POTENTIAL USAGE OF RECUMBENT TRICYCLE AMONG  
MALAYSIAN POPULATION CONSIDERING  
ERGONOMIC ASPECT**

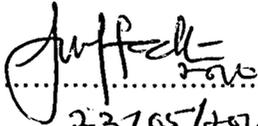
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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

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## **ABSTRACT**

In this modern science and technology, every innovation that produce new product or improve the existing the product much have a value that will compete to satisfied the users of the product. By referring to this project, some improvements or modification targeted to apply to the product, recumbent tricycle. A recumbent tricycle is a 3-wheel human power vehicle that places the rider in a laid-back reclining position. Most recumbent riders choose this type of design for ergonomic reasons. The purpose of this project is to design a recumbent tricycle for Malaysian usage considering ergonomics aspect. The ergonomics aspects considered in this project including the dimension for seat position, handling position and the dimension of cycle movement. The focus in this project is on the frame of the recumbent tricycle. Thus, the Malaysian anthropometry was strongly referred to obtain optimal dimension of specific parts which applied to the recumbent tricycle. In this project, the reference from the existing recumbent tricycle and biomechanical information was very helpful. The methodology of the project based on mechanical study where after the information of the anthropometry was analyzed and synthesized, it visualized in a 3D model using CATIA V5R17 software. Then, in this modeling stage, the product also went through a finite element analysis to determine the maximum stress to see either the design can sustain the rider's load. Then, another purpose of the project is to fabricate the designed recumbent tricycle as a functional mock up. The product tested again to verify its functionality and all criteria were satisfied especially for Malaysian usage. As a result, the new design of this recumbent tricycle for Malaysian population managed to designed, fabricated and tested.

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