

Universiti Teknologi MARA

**Designing an Innovative Hands-free
Walking Aided Tool for Temporary
Physical Impairments
(Knee, Foot, and Ankle Injuries)**

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Design Report submitted in partial fulfillment of the
requirement for the Master Degree of
Design Technology (AD774)
Faculty of Art & Design

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CANDIDATE'S DECLARATION

I declare that the work in this Design Report was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicate or acknowledgment as referenced work. This design report has not been submitted to any other academic institution or non-academic institution for any other qualification.

In the event that my design report is found to violate the conditions mentioned above, I voluntarily waive the right conferment of my degree and agree to be subjected to the disciplinary rules and regulation of Universiti Teknologi MARA.

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ABSTRACT

To design a hands free replacement for standard crutches used by those who are actively involved in sports whether professional athletes or normal people and provides an answer to the mobility problems of some people with temporary disabilities or injuries face in the problems of a lower leg injury. Designing an innovative hands-free walking aided tool is a product to fulfill customer needs especially for those who are temporary impairment (injury) people for rehabilitation process or move in their daily activities better. This research will focus on designing an innovative hands-free walking aid in for problems and pain points, better support, material and functionality that creates more comforts and a more easy motion of operation. There are several aspects which will be considered on this project such as high strength, ergonomics and the feasibility of users weight load restricted to thigh to secure where the main point of the lock supports attaches to the users is. Material used on this project consists of lightweight material such as hollow aluminum steel tube in order to support certain weight capacity and built with specific height in order to meet the ergonomic aspect to produce comfortable and friendly product. This wearable product also built with specific adjustable height and different size in order to meet the ergonomic requirement. Furthermore, the size as well as the height of this crutch can be adjusted. Hence, different people can use it easily. The piece can be disbanded and stored when it is not in use. Further work need to be done on this design includes checking for manufacturability of all the parts.