



# Re-evaluation of the Cerebral Palsy's orthotic need in Adaptive Seating Orthosis (ASO) design

## ABSTRACT

*Adaptive seating orthosis (ASO) for Cerebral Palsy (CP) patients in Malaysia mostly are imported, highly expensive for the bottom millions, bulky and complicated design structure, and not accommodating users' preferences. Through a study involving 10 CP patients with their parents/guardians in Malaysia, the goal of this paper is to re-assess the design needs of CP's orthotic in ASO design. The purpose of the study is to identify the difficulties, as well as the ergonomic and functional problems, in caring for CP patients with the current ASO. The result of the study revealed several of the problems that parents/guardians face while taking care of the CP patient, mainly caused by technical flaws in the current ASO design. Therefore, a few design criteria have been proposed to solve the addressed problems. The contribution of this study will help as a preference for the improvement and development of ASO design.*

## KEY WORDS

Cerebral Palsy, Adaptive Seating Orthosis, design thinking, ergonomics, product design

Muhammad Jameel  
Mohamed Kamil <sup>1,2</sup>   
Mohd Najib Abdullah Sani <sup>1,3</sup> 

<sup>1</sup> Universiti Malaysia Sarawak, Design Technology Programme, Faculty of Applied and Creative Arts (FACA), Sarawak, Malaysia

<sup>2</sup> Universiti Malaysia Sarawak, Institute of Creative Arts and Technology (iCreate), Sarawak, Malaysia

<sup>3</sup> Universiti Malaysia Sarawak, University Industry Centre (UNIC), Sarawak, Malaysia

*Corresponding author:*

*Muhammad Jameel Mohamed Kamil  
e-mail: [mkmjameel@unimas.my](mailto:mkmjameel@unimas.my)*

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## Introduction

One of the Six Strategies Trusts outlined in the Eleventh Malaysia Plan (RMK-11) is to enhance the well-being of Malaysian people by providing better healthcare, particularly in the B40 group. The treatment for CP in Malaysia; a long-term condition that developed when areas of the brain that control muscles are damaged is one of the main health and well-being problems. Postural control deficiencies as a major component of gait disturbances in CP patients have been proposed by medical experts. The lack of suitable seating modifications has made it difficult to reach an independent sitting and has had an impact on their quality of life. Due to the condition, various Adaptive Seating Orthotics (ASO) products have been purposely developed and produced for CP patients. However, the majority of ASOs for CP patients in Malaysia are imported, very costly for the bottom million, heavy with bulky and complicated design structure that does not fit Malaysian anthropometric details, daily used and

preferences (Hui et al., 2011; Kamaralzaman et al., 2018; Tan & Yadav, 2008; Tharshini et al., 2016). As a response, it is essential to have a good ASO design that can easily accommodate day-to-day activities, purposely created based on Malaysian anthropometrics, and affordable. Matos et al. (2014) claim that the last decade has seen an increased emphasis on the design of medical equipment for the disabled, especially on patient safety, and a few projects have been set up to strengthen these elements. In any event, Matos et al. (2014) also claimed that most multidisciplinary organisations responsible for the advancement of products for disabled have struggled to recognise and integrate good design as a fundamental feature. In addition, the perception was compounded by the belief that the vast majority of items designed for disabled do not adequately address the actual and realistic needs of users. For instance, issues such as symbolic functions, aesthetic or, in outrageous cases, ergonomic and functionality are not generally considered significant as mechanical performance or economic