e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
( Peer-Reviewed, Open Access, Fully Refereed International Journal )
Volume:04/Issue:05/May-2022 Impact Factor- 6.752 www.irjmets.com

# DESIGN AND FABRICATION OF ADJUSTABLE HANDLE BAR MECHANISM FOR TWO WHEELER VEHICLE

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## ABSTRACT

Physical ergonomics is concerned with human anatomy and some of the anthropometric, physiological and biomechanical characteristics associated with physical activity. The principles of physical ergonomics have been widely used in the design of consumer and industrial products to optimize performance and prevent/treat work-related disorders by reducing mechanisms underlying acute musculoskeletal injuries/disorders and chronic diseases of mechanical origin. Risk factors such as local mechanical stress, force, and posture in sedentary office environments lead to work environment injuries. Ergonomics is important for people diagnosed with diseases or physiological disorders such as arthritis (both chronic and temporary) or carpal tunnel syndrome. Insignificant or imperceptible pressure for those unaffected by these disorders can be very painful or render the device inoperable for those with it. Many ergonomically designed products are also used or recommended to treat or prevent such disorders and treat pressure-related chronic pain.

**Keywords:** Analysis, Innovation.

## I. INTRODUCTION

Human factor and ergonomics (often referred to as human factor) is the application of psychological and physiological principles to the engineering and design of products, processes, and systems. The goal of the human element is to reduce human error, increase productivity, and improve system safety, availability, and comfort by emphasizing human-system interaction. Technology. This field is a combination of many disciplines, such as psychology, sociology, engineering, biomechanics, industrial design, physiology, anthropometry, interaction design, design. visualization, user experience and user interface design. In the study, human factor uses the scientific method to study human behavior in order to apply the obtained data to 4 main goals. It is essentially a study of the design of devices, instruments and processes adapted to the human body and its cognitive abilities. The two terms "human factor" and "ergonomics" are essentially synonymous. There are different ways to measure the fitness of a person or a population. Capability analysis is often performed in the field of ergonomics where a specific task (e.g. lifting, pushing, etc.) and/or posture is assessed and compared with the capabilities of the population. number for which the task is expected. intended for. External reaction moments and forces acting on the joint are often used in such cases. The bearing capacity of a joint is expressed as the amount of torque that the muscle force can generate at the joint against the external torque. Skeletal muscle produces reactive forces and moments at the joints. To avoid injury or fatigue, when the person is performing a task, such as pushing or lifting a load, external torques are generated at the joints due to the load of the hands and the weight of the body segments. ideally smaller than muscle. moment force at the joint. One of the first sagittal plane models for force prediction was developed by Chaffin in 1969. Based on this model, the external torque at each joint must not exceed the mechanical force torque at that joint.

## II. METHODOLOGY

Ergonomics is the study of the relationship between workers and the work environment. It is essential that workers be mindful and aware of the potential ergonomic risk factors surrounding their workplace because of potentially fatal consequences such as death and disability. Examples of potential risk factors for ergonomics include repetitive movements, static posture, heavy lifting, physical exertion, exposure to excessive vibrations, and more. Workers' lack of vigilance about the existence of potential risk factors in their environment can jeopardize their safety and health. In Malaysia, the Department of Occupational Safety and Health (DOSH) was established to protect the safety, health and welfare of people in the workplace from any occupational hazards.

The Occupational Injury Survey by Industry is conducted annually by DOSH to analyze data summarizing DOSH findings for 2014-2016 across three levels of severity such as death (D), non-permanent disability.

## III. DESIGN CALCULATION

L1 .... Length of rod 1 connected to wheel = 914.4mm.

L2 .... Rod length2 = 609.6mm.

H'.... Total height of handle before adjustment = 1041.5 mm.

d... Distance between two holes = 76.2 mm.

D1 = D2, .... Bar opacity = 50.8mm.

W .... adjustable handle weight = 60N.

Material = Stainless steel.

Density = 7500kg/m3.

Now,

The height of the handle after adjustment is given by,

H = H' + D

H = 1041.5 + 50.8

H = 1092

## IV. RESULTS AND DISCUSSION

The distal force can be measured semi-quantitatively with a hand-held altimeter (or with a HA cuff inflated by the patient) to record grip strength. Requires specialized equipment, usually a dynamometer. A dynamometer is a more accurate measure of the force a muscle can exert and can help record differences in force over time. Expensive versions exist as well as inexpensive versions found on internet searches.

**Figure 1:** Adjustable handle mechanism for two-wheeled vehicles.

## V. CONCLUSION

The distal force can be measured semi-quantitatively with a portable altimeter (or with a BP cuff inflated by the patient) to record grip strength. Requires specialized equipment, usually a dynamometer. A dynamometer is a more accurate measure of the force a muscle can exert and can help record differences in force over time. Expensive versions exist as well as inexpensive versions found when searching the internet.

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