



UNIVERSITI TEKNOLOGI MARA

**EFFECT OF WHEEL DIAMETER IN SELECTED VARIABLES  
TOWARDS CROSS COUNTRY MOUNTAINBIKING**

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### *Abstract*

The purpose of this study was to determine the effects of wheel diameter on selected variables in cross-country mountain biking among SUKMA cyclists. Ten subjects (N=10) were recruited. All subjects underwent two conditions: riding a standard 27.5-inch and a 29-inch wheel diameter mountain bike on a 4.0 km trail. The findings showed a significant difference in time taken, average speed, and top speed. The 27.5-inch wheel diameter prevailed in terms of time taken and average speed. Meanwhile, the 29-inch wheel diameter excelled in gaining height and top speed. Thus, the track favored the 27.5-inch wheel diameter, which provides better performance compared to the 29-inch wheel diameter.

**Key words:** Wheel diameter, Mountain bike, Cross Country, SUKMA cyclist

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of Study

Mountainbiking (MTB) is a sport of riding bicycles off-road, often over rough terrain, using specially designed mountainbike. It began in the 1970s, originally as a downhill sport, practised on customized cruiser bicycles around Mount Tamalpais, United States of America. Olympic discipline has recognised cross-country mountain biking that need cyclists to navigate themselves into different kind of terrains and obstacles since the Atlanta Games in 1996 (Wilber, 1997). Mountain bikes share similarities with other bikes but incorporate features designed to enhance durability and performance in rough terrain. Mountain biking is categorized into cross country, trail riding, all mountain, downhill, freeride and dirt jumping. Over the time the mountain bike reach the Asian region and Mountain Bike Race is becoming a popular sport within Sarawak as well as Malaysia. The races are governed by Union Cycliste Internationale (UCI) based in Switzerland and in Malaysia it is governed by Malaysian National Cycling Federation (MNCF). Mountainbiking have been thoroughly experimented over the years associating it with numerous types of variables that plays a vital part in enhancing the athlete's performance. The researchers have stated that any movement made by the cyclist are influenced by rolling resistant, aerodynamic drag, gravity and inertia (Old, Norton & Craig, 1993) and rough mountain bike tracks are closely related to the rolling resistance (Bertucci & Roger, 2012) indicating it can affect the riding pattern which will affect the time taken, average speed and top speed.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This study discussed the topic on the effect of wheel diameter in selected variables towards cross country mountainbiking among SUKMA mountainbike athletes from semi-professional cycling team that is based in Kuching. This chapter discusses the cross country mountainbiking sport, the physiological demands and mechanical demand of MTB, types of terrains and type of wheel diameter in MTB tournaments. The discussions were based on previous studies and findings.

#### **2.2 Cross Country Mountainbiking**

Over the years, cycling have evolved since the first bicycle made in the late 1800s. It began in the 1970s, originally as a downhill sport, practised on customized cruiser bicycles around Mount Tamalpais, United States of America. Joe Breeze founded a new cycling category which is mountainbiking during the off season of road cycling (Bike198, 2019). Mountainbiking is an extreme sport and need a special characteristics bicycle in order to propel the bike through the terrains. After the creation of the new category, there are many types of events in mountain biking and can generally be broken down into multiple categories: trail riding, all mountain, downhill, freeride and dirt jumping and the most famous one is the cross country