UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF A PROTOTYPE AUTOMATIC TENNIS BALL LAUNCHER

AHMAD HAZIM BIN ZURAIK

DIPLOMA

Feb 2024

ABSTRACT

This project aimed at designing and constructing a device that enables tennis players to improve their skills through independent training. However, current training methods often require a partner to feed balls, limiting practice opportunities and convenience. This project addresses the problem by developing an automatic tennis ball launcher that can accurately and consistently launch balls, simulating realistic playing conditions. The launcher incorporates a motor, hopper for ball storage, and a precise launching mechanism, with adjustable settings for speed, trajectory, and direction. Safety features are integrated to prevent accidents during operation. The significance of this project lies in providing individuals with a convenient and accessible training tool that promotes skill development, encourages independent practice, and improves overall performance on the tennis court. Additionally, the project contributes to the advancement of sports technology and engineering, showcasing innovation and fostering interest in tennis. By incorporating sustainability considerations such as energy efficiency, material selection, and environmental impact assessment, the project aims to minimize its ecological footprint and promote responsible manufacturing and usage practices. Overall, the Automatic Tennis Ball Launcher project offers a promising solution for tennis players seeking a versatile training tool to enhance their abilities and achieve their full potential in the sport.

ACKNOWLEDGEMENT

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully.

Secondly, I want to thank everyone who has helped make this initiative successful from the bottom of my heart. My sincere gratitude goes out to my supervisor, Radzi Abdul Rasih for all their excellent advice, help, and knowledge. Their assistance was crucial in making this automatic tennis ball launcher concept a success.

Thirdly, I want to express my gratitude to my friends and family for their constant support and confidence in the viability of the idea. I also want to express my gratitude to the entire academic community and the business experts who offered insightful comments.

Finally, this dissertation is dedicated to my father and mother for the vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulilah.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

In contemporary times, sports activities are no longer unfamiliar among societies and have gained increasing attention worldwide, including among the people of Malaysia. The development of sports infrastructure such as tennis courts, futsal arenas, badminton facilities, and open fields is being utilized effectively by our community. Engaging in sports is no longer limited to daytime but has also become a popular activity at night. This is because many of us are busy seeking livelihoods and fulfilling our responsibilities during the day, hence sports and exercise activities are carried out in the evening.

For example, a good sport for health is tennis. Tennis is a very popular sport in Australia and is played by people of all ages. Tennis can be played by two people (called 'playing singles') or four people ('doubles'). Players use racquets to hit a ball over a net into the other side of the court. A game of tennis involves a variety of types of play, including serving the ball over the net, rallies (when the ball is hit back and forth between opponents), fast movements and strategic game play. Tennis can be played as a sport or as a recreational activity with friends and family.

Therefore, every individual requires continuous training to hone their skills in tennis. The aim of this project is to provide opportunities for people of all ages to practice wherever they are, especially when they must train individually. By embracing the concept of individual training, this initiative aims to empower individuals to pursue their tennis goals and improve their skills even without a dedicated training partner or a specific training facility.

Project will focus on creating resources and tools that can help individuals in their solo tennis training. This might involve offering tutorial videos, training recommendations, and advice for honing specific techniques and drills. The resources will be easily accessible online, allowing individuals to access them anytime and anywhere.