



UNIVERSITI TEKNOLOGI MARA

**EFFECTS OF PLYOMETRIC TRAINING ON GRASS SURFACE  
VERSUS CONCRETE SURFACE ON JUMPING  
PERFORMANCE AMONG VOLLEYBALL ATHLETES**

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**DECEMBER 2017**

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## **ACKNOWLEDGEMENT**

I would like to acknowledge in this special column to thank Allah S.W.T especially for His peace and faithfulness that I have been receiving which allowed me to complete my Research Project and reach this far of my academic life and as a student.

The completion of this Research Project took a great deal of effort and will not be completed without the courage and hard work. Furthermore, without the support and cooperation from all individuals who provided opinions and feedback as well as comments, this research project seems impossible to be completed.

In particular, I would like to convey my great appreciation and heartfelt thanks to Miss Patricia Pawa Pitil who is my Internal Advisor for this Research Project, for her support, guidance, comments, and ideas, advises, patience and sharing her time in supervising me throughout this excursion.

Lastly, I would like to address my deepest appreciation to my parents and friends for always there for me, sharing their time, giving motivational support and assistance to complete the research.

## ABSTRACT

The purpose of this study was to determine the effect of 4 weeks plyometric training on the grass surface group and the concrete surface group on jumping ability among volleyball athletes. Twelve subjects ( $N = 12$ ) were recruited. The subjects were evaluated in two types of the vertical jump which were squat jump and countermovement jump. The result of this study indicates that 4 weeks intervention showed a significant improvement between pre and post on squat jump and countermovement jump ( $p < 0.05$ ) on both grass surface and concrete surface. However, in comparing the grass surface and concrete surface, there was no significant difference ( $p > 0.05$ ). These findings suggest that 4 weeks of plyometric training on a grass surface and concrete surface improves vertical jump ability; squat jump and countermovement jump among volleyball athletes.

**Keywords:** Plyometrics, type of surfaces, volleyball athletes

# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND OF STUDY

Volleyball games were popular with an offensive and defensive performance of the players such as attack, block, and serve and jumps are important to perform all of these elements (Jastrzebski, Wnorowski, Mikolajewski, Jaskulska, & Radziminski, 2014). Volleyball was a competitive sport played on many different court surfaces depending on whether it was being conducted indoors or outdoors (Eugenia, Apostolos, Goran, & Maria, 2013).

Plyometric were training techniques used by athletes in all types of sports to increase strength and explosiveness or power (Amrinder, Sakshi, & Jaspal, 2014). Plyometric or jumping exercises were part of resistance training to enhance the jumping abilities of athletes, they were used to bridge the gap between speed and strength exercises to ease the accessing of motor units (Rezaimanesh, Parisa & Soheil, 2011).

The specific jumping abilities required by the different volleyball positions have rarely been studied. There were no significant differences between the playing positions in terms of jumping ability. In volleyball, there were some specific movement patterns associated with jumping, which were a block jump and an attack or spike jump. Squat jump and countermovement jump were important which these two types of jumping require performing defense jump and attack jump (Sattler, Sekulic, Hadzic, Uljevic, & Edvin, 2012).