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EXTENDED ABSTRACT

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INVESTIGATING A LATERAL CONE JUMP-BASED HIGH-INTENSITY INTERVAL TRAINING PROTOCOL FOR ENHANCING POWER AND AGILITY IN COLLEGIATE COMBAT ATHLETES

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I. Introduction

High-Intensity Interval Training (HIIT) has emerged as an effective training modality in various sports, but its specific impact on combat sports athletes remains underexplored [1]. This study aims to investigate the effects of HIIT during lateral cone jumps on power and agility, two critical attributes for combat athletes [1,2]. By addressing gaps in existing research, this study seeks to contribute valuable insights for improving athletic performance in combat sports.

II. Methods

Thirty-four combat sport athletes, aged 18 - 25 years old from UiTM Seremban 3 were selected based on tournament experience and physical readiness, and participated in this study. The HIIT protocol involved three sets of 10 lateral cone jumps with 30 seconds of exercise and 30 seconds of rest between sets [3]. Power was measured using the Vertical Jump Test, while agility was assessed using the Agility T-test [4]. Participants provided informed consent before the study.

III. Results and Discussion

A. Power

HIIT significantly improved power among athletes, as vertical jump scores increased notably in the lateral cone jump group (mean difference: 3.88, $p<0.05$). The enhanced leg power was attributed to improved neuromuscular coordination, fast-twitch fiber recruitment, and utilization of the stretch-shortening cycle. These adaptations highlight HIIT's efficacy in building lower-body strength critical for combat sports (Figure 1).

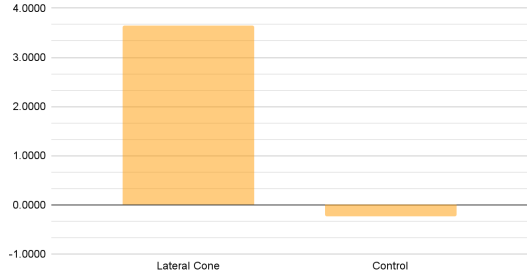

Fig. 1 Bar chart comparing average vertical jump power between the lateral cone exercise and control conditions.

B. Agility

Agility significantly improved in the lateral cone jump group, with reduced Agility T-test times (mean difference: -2.28, $p<0.05$). Enhanced neuromuscular control, anaerobic capacity, and proprioception contributed to rapid directional changes and improved reaction times. These findings validate the combined approach of HIIT and plyometric training for agility development in combat athletes (Figure 2).

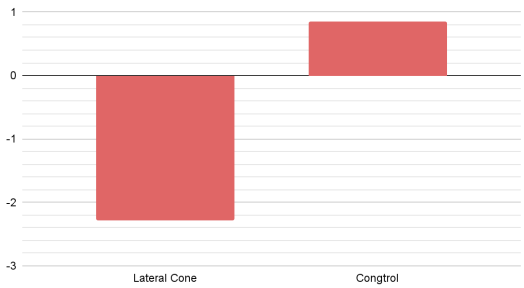

Fig. 2 Bar chart comparing average T-test agility performance between the lateral cone exercise and control conditions.

IV. Conclusions

HIIT during lateral cone jump drills significantly improves power and agility in combat sport athletes. Enhanced neuromuscular function, fast-twitch muscle recruitment, and anaerobic capacity contribute to better vertical jump and agility T-test performance. These findings underscore the effectiveness of HIIT-based plyometric exercises in addressing combat-specific demands for power and agility.

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