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**EXTENDED
ABSTRACT**

Acute Effect of Different Elasticity Resistance Bands With Plyometric Exercise on Power Performance Among UiTM Seremban 3 Volleyball Player

Muhammad Afham Wajdi Abdul Taufeq¹ & Muhammad Zulqarnain Mohd Nasir^{1*}

¹Faculty of Sports Science and Recreation, Universiti Teknologi MARA, Negeri Sembilan Branch, Seremban Campus, Negeri Sembilan, MALAYSIA

*Corresponding author: zulqarnain9837uitm.edu.my

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I. INTRODUCTION

This study investigates the acute effects of resistance bands with varying elasticity levels combined with plyometric exercises on power performance. Focusing on UiTM Seremban 3 amateur volleyball players, it aims to address a research gap concerning non-elite athletes [1]. While previous studies emphasized elite populations [2], this research explores underexamined combinations of resistance and plyometric training on vertical and broad jump capabilities.

II. METHODS

Twenty male amateur volleyball players (age 18–25) completed a crossover design comparing lightweight and medium-weight resistance bands with plyometric training. Each condition was randomized with a 1-week washout. Vertical jump was measured using a Vertec device, and standing broad jump via measuring tape. Pre- and post-tests were administered for both exercises, and the best trial results were used for analysis.

III. RESULTS AND DISCUSSION

A. Vertical Jump

The lightweight band significantly improved vertical jump height (*mean difference* = 1.85 cm, $p = 0.004$), showing a strong positive correlation ($r = 0.934$). Medium-weight bands showed a smaller, non-significant gain (*mean difference* = 1.40 cm, $p = 0.100$). These findings suggest that lighter resistance yields more consistent and effective acute enhancements in vertical jump among amateur volleyball players.

B. Standing Broad Jump

Standing broad jump improved significantly under both resistance levels, with a greater gain under the lightweight band (*mean difference* = 7.40 cm, $p < 0.001$) than the medium-weight band (*mean difference* = 5.40 cm, $p = 0.017$). Strong correlations suggest reliable improvements, and participants likely benefited more acutely from lighter resistance in developing horizontal explosive power.

C. Comparison Light and Medium Resistance Band

Although lightweight bands showed slightly better mean improvements in both vertical and broad jumps, the differences compared to medium-weight bands were not

statistically significant ($p > 0.05$). Weak to moderate correlations suggest individual variability. Therefore, while lighter bands may offer practical benefits, no definitive advantage over medium resistance was established across jump types.

TABLE I

COMPARISON OF PRE- AND POST-TEST RESULTS ON VERTICAL AND STANDING BROAD JUMP PERFORMANCE USING LIGHT AND MEDIUM RESISTANCE BANDS

Variable	Pre	Post	<i>p</i> value
Light Resistance Band on VJ	63.8 ± 7.02	65.7 ± 7.04	0.004*
Light Resistance Band on SBJ	232.6 ± 16.48	240.0 ± 15.25	0.000*
Medium Resistance Band on VJ	64.0 ± 7.14	64.5 ± 7.88	0.100
Medium Resistance Band on SBJ	233.5 ± 17.75	238.9 ± 17.59	0.017*

* ($p < 0.05$)

IV. CONCLUSIONS

Lightweight resistance bands produced greater acute improvements in jump performance than medium-weight bands, though differences were not statistically significant across both tests. Plyometric training with elastic resistance appears beneficial for amateur volleyball players, with lighter bands offering potentially more favourable effects on lower-limb explosive power.

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