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EXTENDED ABSTRACT

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ENHANCING POWER, AGILITY, AND BALANCE THROUGH CORE STRENGTH TRAINING AMONG RACQUET ATHLETES

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I. INTRODUCTION

Core strength training is critical for enhancing athletic performance, yet its specific impact on power, agility, and balance among racquet players remains underexplored [1]. This study investigates these acute effects, addressing a gap in research, particularly for university-level badminton athletes. By understanding these relationships, the findings aim to guide targeted interventions for improved performance in racquet sports [2].

II. Methods

This study involved 20 badminton players (ages 18–29, ≥ 1 year experience) performing core strength exercises: mountain climb (40 sec), plank (1 min), bicycle crunch (15 reps), and medicine ball slams (10 reps), all in 3 sets. Power, agility, and balance were assessed using the standing broad jump, slalom test, and tandem walk test, respectively, to evaluate acute effects [3].

III. RESULTS AND DISCUSSION

A. Effect on Power

The experimental group showed a greater improvement in the standing broad jump (15.0 \pm 19.4) compared to the control group (6.70 \pm 14.6). However, the difference was not statistically significant (t = -1.079, p > 0.05). Despite the lack of significance, improvements from pre- to post-intervention indicate potential benefits of core strength training on power (Figure 1).



Fig. 1 Differences in power between the control and experimental groups.

B. Effect on Agility

Both groups demonstrated similar changes in slalom test performance, with the control group (-0.77 \pm 0.84) and the experimental group (-1.21 \pm 0.99). The difference was not significant (t = 1.09, p > 0.05). While agility improved in both groups, the intervention did not produce a statistically significant effect (p > 0.05; Figure 2).





C. Effect on Balance

The experimental group showed slightly greater improvement in the tandem walk test (-2.56 \pm 2.99) compared to the control group (-0.60 \pm 5.29). However, this difference was also not statistically significant (t = 1.02, p > 0.05). Improvements in balance performance suggest a positive trend (Figure 3).



Fig. 3 Differences in balance between the control and experimental groups.

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IV. CONCLUSIONS

Core strength training led to observable improvements in power, agility, and balance among racquet players, though the differences were not statistically significant. These findings highlight the potential for core exercises to enhance athletic performance, warranting further investigation with larger sample sizes and longer intervention periods.

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