



INTERNATIONAL GRADUATE COLLOQUIUM

i-SPEAK 2025[®]

SPORTS AND PHYSICAL EXERCISE ASSEMBLY OF KNOWLEDGE SHARING

COLLOQUIUM PROCEEDINGS

EXTENDED ABSTRACT

EDITOR | ADAM LINOBY

ACUTE EFFECT OF PLYOMETRIC TRAINING ON SPEED AND AGILITY PERFORMANCE IN NETBALL ATHLETES

Nurul Izzah Syahirah, Adam Linoby, Razif Sazali, Yusandra Md Yusoff, Amrun Haziq, & Muhammad Zulqarnain*

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

*Corresponding author: zulqarnain9837@uitm.edu.my

Keywords: Agility, Speed, Plyometric training, Netball performance, Change of direction

I. INTRODUCTION

Plyometric training is a widely adopted strategy to enhance athletic performance, yet its acute effects on speed and agility in netball athletes remain underexplored [1]. This study investigates short-term plyometric training effects on sprint speed and change of direction (COD) [2], addressing gaps in short-term analysis and acute interventions specific to netball performance [3].

II. METHODS

A short-term, acute plyometric program was implemented, featuring box jumps with an 18-inch plyometric box. Speed was assessed via a 20-meter sprint test, and COD was measured using the T-Test. Participants underwent pre- and post-test evaluations to determine the immediate effects of the training intervention.

III. RESULTS AND DISCUSSION

A. Speed Performance

The intervention minimally influenced sprint speed performance. The post-test speed mean for the experimental group (5.73) was slightly higher than that of the control group (5.63). However, this difference was not statistically significant ($p = 0.313$). Pre-test imbalances ($p = 0.018$) between groups further complicated the interpretation of the results (Figure 1).

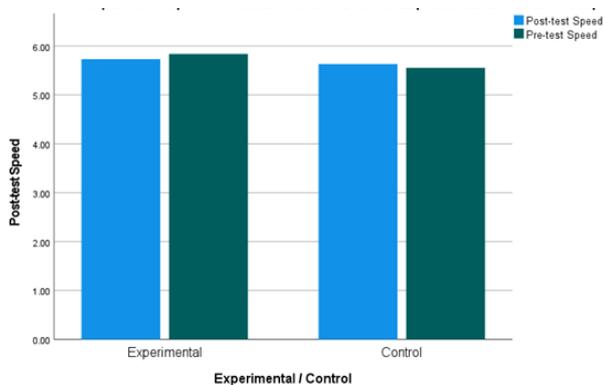


Fig. 1 Comparison of speed performance metrics between experimental and control groups. Bars indicate the mean values, with the post-test results (blue bars) showing marginal differences compared to pre-test results (green bars).

B. Change of Direction Performance

The plyometric training intervention showed no statistically significant effect on COD performance, as measured by the T-Test ($p = 0.40$). Although the experimental group's posttest mean (10.2) was slightly better than the control group mean (10.5), the difference was negligible, indicating limited short-term improvements in agility and directional changes (Figure 2).

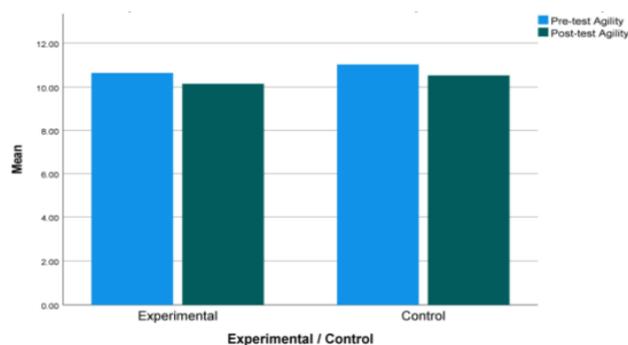


Fig. 2 Bar graph comparing the mean agility performance (measured in seconds) between experimental and control groups during pre- and post-test assessments.

C. Plyometric Training on Speed and COD Performance

The short-term plyometric intervention demonstrated negligible effects on both sprint speed and COD performance. Neither metric showed statistically significant improvement following the intervention. This suggests that a single-session plyometric program may not be sufficient to elicit meaningful changes in athletic performance (Figure 3).

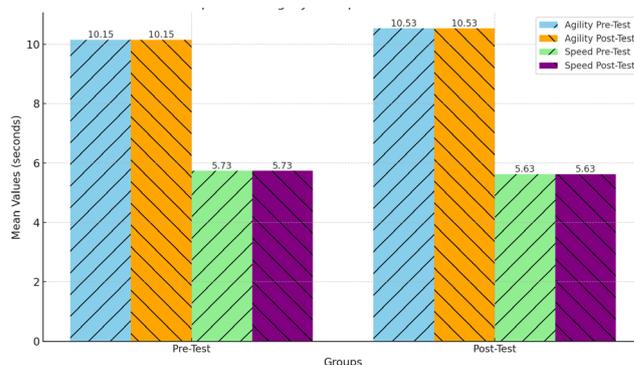


Fig. 3 Bar graph showing both agility and speed performance metrics for pre-test and post-test values.

IV. CONCLUSIONS

This study found that short-term plyometric training had negligible effects on netball athletes' sprint speed and change of direction (COD) performance. The results highlight the need for longer intervention durations and enhanced training protocols to achieve meaningful athletic improvements. Future studies should explore varied plyometric exercises and better control for baseline imbalances to maximize performance outcomes.

ACKNOWLEDGMENT

The authors express gratitude to research participants from UITM Seremban 3, VIPERS NB Club, Primus Netball Club, Kinari Netball Club, and colleagues at UITM Seremban 3 for their invaluable support.

REFERENCES

- [1] Chaabene, H., Negra, Y., Moran, J., Prieske, O., Sammoud, S., Ramirez-Campillo, R., & Granacher, U. (2019). Plyometric training improves not only measures of linear speed, power, and change-of-direction speed but also repeated sprint ability in female young handball players. *Journal of Strength and Conditioning Research*.
- [2] Falch, H. N., Røedergård, H. G., & van den Tillaar, R. (2019). Effect of different physical training forms on change of direction ability: a systematic review and meta-analysis. *Sports Medicine - Open*, 5(1), 53.
- [3] Moran, J., Sandercock, G. R. H., Ramírez-Campillo, R., Meylan, C., Collison, J., & Parry, D. A. (2019). A meta-analysis of maturation-related variations in adolescent boy athletes' adaptations to short-term resistance training. *Journal of Sports Sciences*, 35(11), 1041–1051.