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EXTENDED ABSTRACT

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THE EFFECTS OF PLYOMETRIC WARM-UP ON SPRINT PERFORMANCE IN FIELD HOCKEY ATHLETES

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I. Introduction

Plyometric warm-ups are generally thought to be effective for enhancing sprint performance [1], yet their application in sport-specific contexts like field hockey remains underexplored. This study investigates the impact of different box height jumps on sprint performance over time, addressing critical gaps in sport-specific plyometric strategies to aid coaches in optimizing athlete sprinting ability [2].

II. Methods

Eighteen athletes, divided into three groups based on box height (low height, high height, control) were chosen based on specific criteria relevant to the research objectives. The participants performed 30m sprints after a standardized warm-up and depth jumps at 35cm, 50cm, or no jump (control). Sprint performance was measured at baseline and retested 5 seconds, 5 minutes, and 10 minutes post-jumps.

III. Results and Discussion

The findings (Figure 1) suggest that depth jumps, regardless of box height, significantly enhance sprint performance over time ($p<0.001$), supporting previous research on post-activation performance enhancement (PAPE) [3]. However, the lack of significant differences between groups ($p = 0.277$) indicates that box height may not be a critical factor in short-term sprint gains.

Post hoc analysis revealed that while immediate post-jump performance did not significantly improve ($p>0.05$), sprint times significantly decreased at 5 minutes ($p<0.01$) and 10 minutes ($p<0.001$), suggesting that an optimal recovery period is necessary for maximal sprint gains. This aligns with studies indicating that PAPE effects peak after a short recovery rather than immediately post-exercise [4].

These results highlight the importance of proper timing in implementing depth jumps before sprinting, particularly in pre-competition warm-ups. Future research should investigate individualized recovery times to optimize PAPE effects for different athlete populations.

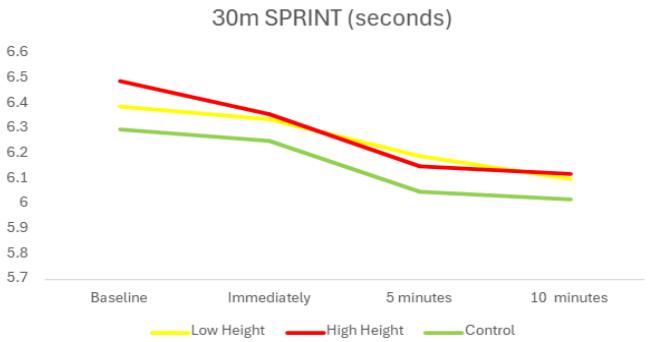

Fig. 1 A line graph shows speed across time between groups comparison.

IV. Conclusions

Plyometric warm-ups effectively enhance sprint performance over time, however, box height does not significantly impact results. Customizing warm-up timing to align with athletic activities could maximize performance benefits in field hockey.

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