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The Acute Effect of Ballistic vs Stretching on Vertical Jump and Linear Sprint Performance Among UiTM Negeri Sembilan Football Players

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I. INTRODUCTION

Warm-up stretching can acutely influence explosive performance in football. Yet, recent studies often contrast static stretching with general dynamic warm-ups rather than directly comparing static and ballistic stretching under controlled conditions. Evidence is also limited for university footballers in Malaysia. This study examines the acute effects of ballistic versus static stretching on two match-relevant indicators, vertical jump height and linear sprint speed, among UiTM Negeri Sembilan football players.

II. METHODS

Twenty-eight male UiTM Negeri Sembilan players (18–25 years) were purposively recruited, screened (PAR-Q), and randomly assigned to ballistic ($n=14$) or static stretching ($n=14$) groups in a pre-test–post-test design. Vertical jump (Vertec; best of 3) and 30 m sprint (stopwatch; best of 2) were assessed pre and immediately post-stretching under standardised conditions. Data were analysed in Jamovi (alpha 0.05).

III. RESULTS AND DISCUSSION

Ballistic stretching produced larger acute gains in vertical jump than static stretching. Jump height increased by 4.64 cm ($SD = 1.95$) after ballistic stretching compared with 1.21 cm ($SD = 1.19$) after static stretching, yielding a significant between-group difference, $t(26) = 5.63$, $p < .001$, with a large effect size (Cohen's $d = 2.13$).

For the 30 m sprint, ballistic stretching improved speed more than static stretching. Sprint time decreased by 0.156 s ($SD = 0.021$) after ballistic stretching, while static stretching showed minimal change ($M = -0.004$ s, $SD = 0.016$). Because normality was violated, the Mann-Whitney test indicated a significant difference ($U = 0.00$, $p < .001$) with a very large effect.

IV. CONCLUSIONS

Among UiTM Negeri Sembilan football players, ballistic stretching elicited significantly greater acute improvements in vertical jump height and 30 m sprint performance than static stretching. These findings support using ballistic stretching in pre-activity warm-ups when the goal is to maximize immediate power and speed outputs relevant to football match demands.

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