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Acute Effects of Plyometric Exercises Versus Static Stretching on Sprinting and Jumping Performance Among UiTMNS FC Soccer Players

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I. INTRODUCTION

Soccer requires high levels of explosive performance, particularly sprint acceleration and vertical jumping ability. Warm-up strategies are widely implemented to optimize neuromuscular readiness before competition. Plyometric exercises utilize the stretch–shortening cycle (SSC) to enhance power output and neuromuscular activation. While static stretching is traditionally used to increase flexibility but may acutely improve force production. This study aimed to compare the acute effects of plyometric exercises and static stretching on sprinting and jumping performance among UiTMNS FC soccer players.

II. METHODS

A crossover experimental design was employed involving 17 male semi-professional UiTMNS FC soccer players aged 18–25 years. Participants completed two warm-up conditions: (1) plyometric exercises and (2) static stretching, separated by 72-hour washout periods. Sprinting performance was assessed using a 20 m sprint test, while jumping performance was measured using the Vertec vertical jump test. Data were analysed using paired-samples t-tests, with significance set at $p < 0.05$.

III. RESULTS AND DISCUSSION

The results indicated that plyometric exercises significantly improved sprinting and jumping performance ($p < 0.05$), whereas static stretching demonstrated smaller or non-significant improvements ($p > 0.05$). The findings support the role of the stretch–shortening cycle in enhancing neuromuscular activation and explosive performance. Static stretching may temporarily reduce muscle stiffness and neural drive, potentially limiting maximal force output.

IV. CONCLUSION

In conclusion, plyometric exercises were more effective than static stretching in enhancing acute sprinting and jumping performance among UiTMNS FC soccer players. Coaches and practitioners are

encouraged to incorporate plyometric-based warm-up strategies to optimise pre-competition explosive performance.

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