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EXTENDED ABSTRACT

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Effects of Rigid Tape and Ankle Guards on Balance Performance Among Rugby Players

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I. Introduction

Rugby is a high intensity contact sport that requires rapid changes of direction, acceleration, and physical collisions, which increase the risk of ankle injuries. Ankle sprain is one of the most common injuries among rugby players and may lead to reduced balance performance and recurrent instability. Dynamic balance is essential for maintaining postural control during sport-specific movements and for reducing injury risk.

External ankle supports such as rigid tape, and ankle guards are widely used in rugby to enhance joint stability and prevent injury. Rigid tape provides firm mechanical restriction and limits excessive ankle movement, whereas ankle guards offer moderate support with greater flexibility. However, limited research has directly compared their effects on balance performance among rugby players. Therefore, this study aimed to determine the effects of rigid tape and ankle guards on balance performance among rugby players.

II. Methods

A within-subject crossover experimental design was used in this study. A total of ten male rugby players aged between 18 and 25 years who were free from ankle injuries for at least six months participated in this study. Each participant attended two testing sessions separated by 48 to 72 hours to minimize fatigue and carryover effects. Dynamic balance was assessed using the Modified Star Excursion Balance Test (MSEBT) in three reach directions: anterior (ANT), posteromedial (PM), and posterolateral (PL). Participants performed the test under two conditions: wearing rigid tape and wearing an ankle guard. Three trials were conducted for each direction, and the average reach distance was recorded. Paired-samples t-test analysis was conducted using Jamovi software, with significance set at $p < 0.05$.

III. Results and Discussion

Based on the mean graph of MSEBT scores, rigid tape showed higher mean values than ankle guards across several reach directions. In the anterior direction, the mean score was 80.8 for rigid tape and 64.6 for ankle guards. In the posteromedial direction, the mean score was 123.0 for rigid tape and 104.5 for ankle guards. In the posterolateral direction, the mean score was 122.3 for rigid tape and 105.0 for ankle guards. These findings indicate that rigid tape provides better dynamic balance performance. The mean differences across all directions and conditions suggest that more rigid external support provides additional stability to the ankle joint during the balance test.

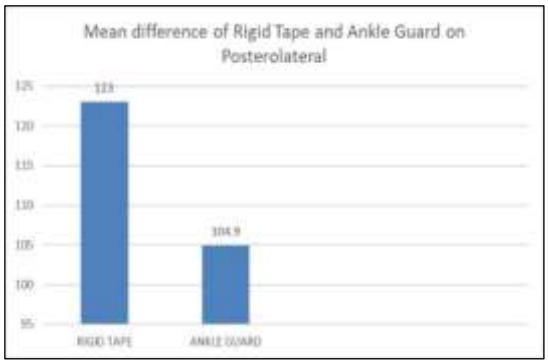


Fig.1 Comparison between rigid tape and ankle guard on posterolateral

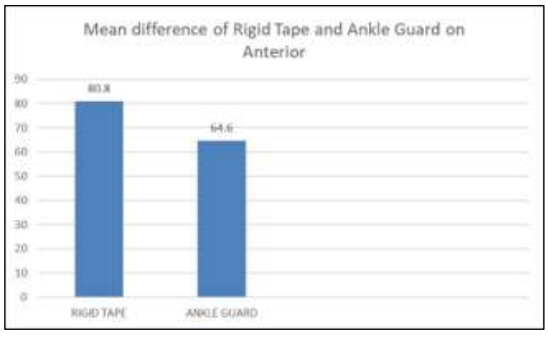


Fig.2 Comparison between rigid tape and ankle guard on anterior

The results showed that rigid tape significantly improved dynamic balance performance compared with ankle guards in all reach directions. A highly significant difference was found in the anterior direction ($p < .001$), while significant improvements

were also observed in the posteromedial direction *(p* = 0.016) and posterolateral direction (*p* = 0.010).

These findings support previous studies showing that rigid tape can improve joint stability and proprioceptive feedback. The mechanical restriction provided by rigid tape may reduce excessive ankle movement and improve neuromuscular control during single-leg standing. In contrast, ankle guards provide more flexible support, allowing greater joint movement and resulting in smaller improvements in balance. Overall, the findings of this study suggest that rigid tape provides better stabilisation and may be more beneficial for injury prevention and performance enhancement among rugby players compared with ankle guards.

IV. CONCLUSIONS

Rigid tape significantly improves dynamic balance performance compared with ankle guards among rugby players. These findings provide practical implications for coaches, physiotherapists, and sports practitioners in selecting appropriate ankle support to enhance performance and reduce injury risk. Future studies are recommended to involve larger sample sizes and long-term intervention designs.

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