DOI.10.7860/JCDR/2026/90232.23779 Abstract No.: 09

Association between Lumbo-pelvic Rhythm and Dynamic Balance among Male Hockey Players: A Pilot Study

ANSHU KUMAR RAY[1], JOYDIP SAHA[2]

ABSTRACT

Introduction: Field hockey requires lateral dominance with sustained forward flexed and asymmetrical positions, which may affect lumbo-pelvic biomechanics. Alterations in lumbo-pelvic rhythm may impact lower limb function. Although dynamic balance is considered crucial, its relationship with Lumbo-Pelvic Rhythm (LPR) in young hockey players is unclear.

Aim: To determine the association between lumbo-pelvic rhythm and dynamic balance among developmental male field hockey players.

Materials and Methods: Fourteen male field hockey players (mean age: 16.71±2.27 years) participated in this pilot study. The Star Excursion Balance Test (SEBT) was used to measure dynamic balance, and two-dimensional (2D) video analysis software KINOVEA was used to measure lumbo-pelvic rhythm in the sagittal plane during forward trunk flexion. Composite reach scores were calculated for dominant and non-dominant limbs. The relationship between LPR and dynamic balance was examined using the Chi-square test with Phi/Cramer's V as a measure of effect size.

Results: The participants demonstrated homogeneity in demographic and anthropometric characteristics, with a mean age of 16.71±2.27 years, height of 164.50±6.24 cm, and body weight of 51.57±6.97 kg. The mean scores of the composite dynamic balance were 96.24±9.07% for the dominant limb and 95.66±7.32% for the non-dominant limb, whereas the mean lumbo-pelvic rhythm ratio was 1.77±0.26. A statistically significant association was observed between LPR and dynamic balance for both the dominant limb (χ^2=9.545, p=0.002; Phi=0.826) and the non-dominant limb (χ^2=5.83, p=0.016; Phi=0.645), indicating a strong to moderate association.

Conclusion: The results of this pilot study clearly suggest a strong association between lumbo-pelvic rhythm and dynamic balance in developmental male field hockey players.

Keywords: Biomechanical phenomena, Field hockey, Lower extremity.

PARTICULARS OF CONTRIBUTORS:
1. Postgraduate Student, Abhinav Bindra Sports Medicine and Research Institute, KIIT Campus 15, Patia, Bhubaneswar, Odisha, India.
2. Associate Professor, Abhinav Bindra Sports Medicine and Research Institute, KIIT Campus 15, Patia, Bhubaneswar, Odisha, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Joydip Saha,
Associate Professor, Department of Movement Science, Abhinav Bindra Sports Medicine and Research Institute, Bhubaneswar, Odisha, India.
Email: joydipsaha77@gmail.com