

Abstract

Title: Unilateral loading diagnosis in ice hockey

Objectives: *The primary objective* of this work is to determine if junior field hockey players exhibit characteristic muscular imbalances in areas at high risk for unilateral loading. *Sub-objective #1.* Conduct a series of physiological tests (Patrick test, Thomas test, pectoralis muscle shortening test, ankle flexibility test, and left and right knee internal and external rotation tests) on junior field hockey players from four different teams to identify potential areas at high risk for unilateral loading. *Sub-objective #2.* Conduct a statistical analysis of the data collected to determine if there is a statistically significant unilateral strain in any of the areas tested and if there are significant differences between teams.

Methods: In our study, the physical condition of the players was assessed using a modern Tanita scale and diagnostic exercise tests. Statistical methods such as t-tests, ANOVA, Kruskal-Wallis test, Wilcoxon test, and principal component analysis were used for data analysis. We also used Fisher's exact test and chi-square test to evaluate differences in frequency. A post-hoc test was then performed – Tukey's HSD test.

Results: Our study identified statistically significant instances of unilateral load among hockey players within the teams under investigation. However, variations in the intensity of unilateral load between teams were not found. Certain outcomes suggest that teams in superior standings possess players with enhanced physical conditioning. It's crucial to note that superior physical attributes of players do not invariably translate to superior performance on ice, given that numerous factors influence team performance. Noteworthy statistically significant disparities were detected in the average joint rotation among teams.

Key words: unilateral load, muscle imbalance, Thomas's test, Patrick's test, external knee joint rotation, internal knee joint rotation, ankle joint mobility, hamstring