

Abstract

Title: **Objectification and comparison of lower limb strength characteristics in selected sports**

Objectives: The main objective of this study was to objectify and compare selected indicators of lower limb strength in players of team sports games (basketball, football, floorball) of category U19. The secondary objective was to determine the relationship (degree of correlation) between knee joint flexion/extension strength parameters and vertical jump parameters.

Methods: The group consisted of 56 probands from three groups of different sports: basketball, floorball and football, the highest competitions in the Czech Republic in the youth category (16-18 years). An isokinetic dynamometer was used to investigate the flexion and extension forces in the knee joint at different angular velocities of movement (60°/s and 300°/s). Force plates were used to determine inversion dynamics parameters or lower limb strength during two types of vertical jump. Unassisted arm jump and squat jump were tested.

Results: This study found different levels of lower limb strength adaptation in young athletes between the sports of basketball, soccer and floorball. Movement in sports such as soccer and basketball appear to achieve significantly higher absolute and explosive lower limb strength demands than in floorball. These data support the knowledge on sport-specific adaptation to individual sport, and add to the information on the level of differences and relationships of strength abilities in sports such as basketball, soccer and floorball. The data can help to understand coaches with respect to the individualization of specific strength abilities in individual sports. Further research should seek to expand the groups analyzed and also take into account training volume in the comparison between different sports.

Keywords: Basketball, floorball, football, physical performance, inverse dynamics, vertical jump, isokinetic strength, sports performance, sports training