Abstract

Title:

Relation between selected off-ice tests and performance in on-ice Illinois Agility test of ice hockey players between 14-17 years old in Czech elite category.

Objectives:

The main goal of this thesis was to determine whether the somatotype and selected off-ice tests are significant predictors for performance in the on-ice agility test in ice hockey players in the youth elite category.

Methods:

The research group consisted 28 ice hockey players (8 forwards and 18 defenders) $\bar{x}$ = 14,88 ± 0,57. Players played highest youth league during the measurement period. The method of Heath and Carter (1990) was used to determine the somatotype. Squat Jump, Countermovement Jump, Free Arm Countermovement Jump, Sit and Reach, pull-ups and off-ice Illinois Agility with a ball were used as off-ice tests. The Aspin-Welch two-samle T-test with Effect size (ES) Hedges' g was used to evaluate the degree of difference in performance between forwards and defenders. Pearson's correlation coefficient with ES coefficient of determination R2 was applied to determine the tightness of relationships between selected variables. Evaluation of the significance of predictors for performance in on-ice agility tests was performed through multiple regression analysis. The significance of the model was assessed according to the results of statistical significance $p < 0,05$ and adjusted R2.

Results:

From a comparison of values between forwards and defenders was found that there are slight differences in anthropometric and somatic values. The defenders were higher (ES Hedges' g = 0,58) and heavier (ES Hedges' g = 0,49) compared to the forwards. In case of the somatotype, only the endomorphic component turned out to be significantly different. Defenders had a higher percentage of body fat than forwards (ES Hedges'g = 0,23). Measurements of off-ice motor tests revealed that forwards performed slightly better. There was a significant difference in Squat Jump (ES Hedges'g = 0,29), Countermovement Jump (ES Hedges g = 0,32) and Illinois Agility off-ice with ball (ES Hedges' g = 0,33) tests. Defenders performed better in the Sit and Reach test (ES Hedges' g = 0,31) in terms of statistically significant difference.

In the next analysis of the on-ice Illinois Agility with a puck and without a puck were forwards performing better. Moderate ES Hedges' g = 0,3 for on-ice Illinois Agility test without a puck and Hedges' g = 0,23 for on-ice Illinois Agility test with a puck.

In terms of the relationship between somatotype components and Frame indexes with on-ice Illinois Agility tests, none of the values proved to be statistically significant. For motor tests, statistical significance was found for most of the measured tests. The highest correlation was shown in the off-ice Illinois Agility test with the ball and the on-ice Illinois Agility test with a puck. Sit and Reach tests and pull-ups did not show statistically significant correlations in the relationship with the on-ice tests.

In the multiple regression model in the first case, all three somatic components proved to be significant predictors (endomorphy b = 0,33; mesomorphy b = 0,29; ectomorphy b = 0,52). These three predictors explained the performance in the on-ice Illinois Agility test without a puck of 54%. Overall, the proposed model proved to be significant (F = 8,33; p = 0,00069).

The second case, the on-ice Illinois Agility test with a puck, was also statistically significant (F = 4,6; p = 0,012). From the point of view of somatic components, they manifested as significant predictors of mesomorphy (b = 0,46) and ectomorphy (b = 0,59). Motor tests did not prove to be a significant predictor to the on-ice Illinois Agility test with a puck. The only predictor of the on-ice Illinois Agility was the off-ice Illinois Agility test with a ball (b = 0,88). Although only the mentioned test proved to be a significant predictor, the model can be described as statistically significant (F = 6,53; p = 0,00072)

Keywords:

Ice hockey, somatotype, on-ice tests, off-ice tests, Illinois Agility test.