INFLUENCE OF PERFORMANCE DEMANDS ON THE SPECIFIC ACTIVITIES IN YOUTH HANDBALL PLAYERS

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PURPOSE

Handball popularity is rising up in a past decades and a number of changes are related to this. Throwing and agility are an important skill for invasion sports which is also handball. Playing handball is becoming much faster and more dynamic than previous years, also thanks to the modification of the rules with throw off, which places increased demands on physical condition. The goal was to find out what is the relationship between the individual assumptions of game performance on specific activities of handball players.

METHODS

Thirty nine youth handball players from the Czech training center of youth, playing the highest league (age 15.54 ± 0.79 years; height 180.72 ± 7.98 cm; weight 71 ± 10.64 kg) took part in the measurement of body height, body mass, sprint 10, sprint 30, T-test, throwing velocity, broad jump, single leg broad jump, CMJ, mid thigh pull isometric peak force, isokinetic internal and external rotator muscle peak torque in concentric action at 60°/s and 180°/s.

Correlation with Ball throwing velocity	R
Height (cm)	0.41
Weight (kg)	0.735
Sprint 10 (s)	-0.309
Sprint 30 (s)	-0.592
T-test (s)	-0.474
Broad jump (cm)	0.376
Broad jump left (cm)	0.529
Broad jump right (cm)	0.414
Mid thigh pull peak force (N)	0.714
Mid thigh pull peak force (N) / BW	0.26
Shoulder external rotation 60 (N.m)	0.63
Shoulder external rotation 180 (N.m)	0.730
CMJ (cm)	0.379
ECW	0.805
ICW	0.796

Correlation with agility T-test	R
Height (cm)	0.066
Weight (kg)	-0.124
Sprint 10 (s)	0.269
Sprint 30 (s)	0.509
Ball throwing velocity (km/h)	-0.474
Broad jump (cm)	-0.458
Broad jump left (cm)	-0.645
Broad jump right (cm)	-0.589
Mid thigh pull peak force (N)	-0.252
Mid thigh pull peak force (N) / BW	-0.233
Shoulder external rotation 60 (N.m)	-0.386
Shoulder external rotation 180 (N.m)	-0.421
CMJ (cm)	-0.418
ECW	-0.199
ICW	-0.231

RESULTS

Handball throwing velocity showed very strong correlation with body mass (r = 0.735), mid-thigh pull isometric (r = 0.714), shoulder isokinetic at 180°/s (r = 0.730), strong correlation with handball throwing velocity showed sprint 30 (r = 0.592) and shoulder isokinetic at 60°/s (r = 0.63). Agility T-test showed strong correlation with right leg broad jump (r = 0.589) and left leg broad jump (r = 0.645). Backward and stepwise regression analysis determine the best predictor model for handball throwing velocity: sprint 30 (Beta = -0.236, p = 0.003), mid-thigh peak force/body mass (Beta = -0.367, p = <0.001), mid-thigh peak force (Beta = 0.686, p = 0.005), shoulder isokinetic 180°/s (Beta = 0.3, p = 0.027). When all independent variables entered to the model for regression was statistically significant, F = 25.905, p < 0.001, R^2 = 0.735. Broad jump left was identified as the sole predictor variable for agility T-test in the stepwise model (Beta = -0.645, p < 0.001, R^2 = 0.416).

CONCLUSION

Sprint 30m, the ratio of isometric peak force of mid-thigh pull force to body weight, isometric peak force of mid thigh pull, and shoulder isokinetic at 180°/s are most affected by ball throwing speed and for the agility T–test, the broad jump from the left leg appears to be the most influential in youth handball players.

PRACTICAL APPLICATIONS

These findings suggest that sprinting, maximal strength development, arm strengthening, and single leg broad jumps should be incorporated in handball training programmes because they show the greatest influence on specific actions in handball.

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