

Prediction of coordination performance in ice-hockey players based on the structure of coordination capacities

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Abstract

Background. In ontogenesis, ice-hockey lays specific requirements on the level of coordination capacities. The development of coordination capacities differs from the one of conditional capacities, while individual peculiarities of sportsmen should not be omitted.

Aims. An important role is played by the hierarchy of coordination prerequisites in the structure of sport performance. Several remarks are made concerning the issues of the structure of coordination capacities.

Methods. Possibilities of prediction of coordination performance in ice-hockey in 11-15-year-old players were analysed. The research was carried out on a set of selected 283 pupils (11-year-olds=63, 12-year-olds=57, 13-year-olds=56, 14-year-olds=57, 15-year-olds=50) from sport classes within the Slovak Republic specializing in ice-hockey. Coordination performance was observed using 7 motor criteria by Hirtz. Individual performances in coordination tests were transformed into points based on the 5-grade coordination standard for ice-hockey and figured in one test value, which presents an overall level of coordination performance (predictant "Y").

Dependence and share of individual coordination criteria to the overall coordination performance were disclosed using the technique of multiple correlation and regression analysis. The selection of three most valid coordination (predictors "X(T1-T7)") criteria into prediction equations of coordination performance was performed using forward stepwise regression.

Results. The most significant coordination capacities in hockey in ontogenesis are: rhythmic capacity, spatial orientation and temporal parameters estimation. The structure of the above mentioned capacities is invariable in boys aged 11 and 12 years. At the age of 13, the share of spatial orientation capacity is transferred to complex motor reaction speed. At the age of 14 to 15, the stability of rhythmic and spatial orientation capacities is proved true. The share of significance of temporal parameter estimation at the age of 14 is transferred to dynamic balance and at the age of 15, to kinesthetic-differentiation capacity of legs. In players aged 11 to 15 years, we are able to predict the overall coordination performance based on the three selected criteria with a rather high reliability (62.64-72.77%) and low error (1.523-1.973).

Conclusions. The designed calculations can facilitate talent identification, as well as the reduction of specific tests of coordination capacities.

Keywords: ice-hockey, coordination capacities, sport performance, structure, prediction, regression analysis, correlation analysis, boys.