EFFECT OF FUNCTIONAL TRAINING ON SELECTED ELEMENTS OF SPECIAL SKILLS IN ICE HOCKEY PLAYERS

SUMMARY

Introduction: The specificity of each discipline requires the adoption of certain positions and duration in them, the work of specific muscle groups of varying intensity, which has an impact on the shaping of the body posture of athletes. The participation of young players in competitive sports favors the development of overload changes already in adolescence. This can disturb a certain axial stability, generating bad habits and compensations in the body, leading to the appearance of a pathological model of functional limitations. Ice hockey is a fast and dynamic team game with a high risk of injury. While skating there are quick turns, accelerations, sharp braking and body fights so it generates large forces overloading the musculoskeletal system. Trainings for children and adolescents should be comprehensive and focused on shaping the correct body posture and basic movement patterns as well as the skills of ergonomic effort. The implementation of appropriate training periodization, taking into account the individualization among players, is a difficult task for coaches but it is conducive to the optimal development of a young athlete. Supplementing sports training with functional training, motor preparation conducted by specialized physiotherapists and SC coaches is a relatively new method in team sports in Poland. Boyle describes functional training as a group of exercises with specific correction goals that teach athletes how to control their own bodies in all levels of movement and prepare them for proper functioning in match conditions, reducing the risk of injury. Functional training aims to shape the correct movement patterns that are the foundation of human motor skills, allowing for optimal use of them in shaping the special motor skills required in a specific sport discipline. To assess the functional state of a competitor, specific tests are used, which consist in performing exercises that require a combination of mobility, stability, motor coordination and strength. This allows possible functional limitations and asymmetries to be identified. By finding the weakest link during testing, the direction and sequence of work with players is initially determined. Systematic and properly conducted functional training enables the development of optimal postural stabilization, resulting in the basis for the optimal

operation of the entire motor apparatus. Therefore, it seems appropriate to introduce a training unit focused on improving the quality of movement and functional regeneration in such a dynamic sport as ice hockey. Functional training is becoming more and more widely used in various sports. In the scientific literature, there are also works in which the real effects of functional training in various sports disciplines, including team games, and its impact on selected elements of special skills in a given discipline are tested.

Aim of the study: The aim of the study is to evaluate the effects of the introduced functional training on the results of FMS and Y-Balance tests and on selected special skills on ice like speed and agility. Based on the preliminary results of the FMS and Y-Balance tests, a 12-week functional training was implemented to improve movement limitations. Due to the small amount research showing the impact of non-ice training on special performance on ice, the analysis of the results of these studies and conclusions may complement the research niche and optimize ice hockey coaching programs in Poland.

Methods: The research involved 43 hockey players aged 15-17, studying and training in the 1 st and 2nd grade at the Polish Ice Hockey Federation Sports school in Katowice. The tests were carried out twice: before and after the end of 12 weeks functional training program. Players were randomly divided into two groups: Experimental (E), which participated in the functional training program, and Control (K). The Tanita BC418 MA weight was the research tool to determine body weight and body composition. Body height was measured with an anthropometer. For functional assessment, the FMS (functional movement screen) test and the Y-Balance dynamic balance test were used. The Smart Speed measurement system (Fusion Sport, Coopers Plains, QLD, Australia) was used to carry out the tests on ice. Four tests were carried out from the IIHF (International Ice Hockey Federation) test database to assess selected elements of special fitness skills on ice (Speed forward, backward and agility).

Results: The preliminary results indicated the presence of noticeable movement limitations and asymmetry in hockey players, which were visible in most of the FMS tests. Players received the lowest points in 4 tests: rotational stability, hurdle step, in line lunge, deep squat. The FMS test results after 12-week of functional training in the experimental group showed seven statistically significant differences. After functional training, the results of deep squat, hurdle step, in line lunge, mobility of the shoulder, rotational stability, sum of points and the number of asymmetries improved significantly. The analysis of the Y-Balance test results in the experimental group showed a statistically significant improvement in the results in the following variables: difference in cm

between the right and left posterolateral ranges, the right and left Composite YBT, normalized % result for right and left anterior and right posteriorlateral and posteromedial . The 15m and 30m distance forward speed and agility in the experimental group also improved significantly. In the control group, the results of the second measurement in relation to the first one for the following variables significantly worsened: the hurdle step test, the number of asymmetries in the FMS test; right and left YBT Composit score, normalized % score for posterolateral and posteromedial right. The 5 m backward speed test also deteriorated significantly.

Conclusions: The applied functional training significantly improved the evaluation of functional tests and translated into the improvement of the elements of special on ice skills. This research complements the research niche, and may also be a helpful proven system for innovating current youth hockey club programs.

Keywords: ice hockey, FMS, Y-balace, functional training, special fitness