Original Contribution

IMPACT OF INNOVATIVE ICE HOCKEY TRAINING METHODOLOGY ON THE IMPROVEMENT PROCESS

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ABSTRACT
The main goal of this study is to apply and experiment a methodology for improving tactical training in ice hockey. For the proper conduct of the research and data comparison, two groups - experimental and control one, consisting of twenty children - eight to twelve age ranges, were formed. The research was conducted in 2018-2019 at the ice rink in the Winter Palace of Sports. Measurements including forward sprint 36m, forward sprint 9x6, slalom sprint, and sprint x8 were conducted. The results showed that the improvement in all specialized test indicators of the experimental group was obvious. The research and analysis of innovative training methodology in ice hockey techniques have proven positive changes in young players because it measured their performance before and after implementing the new techniques. The data collected showed improvement in various aspects such as speed, accuracy, and overall performance in game-like situations. Additionally, the specific and task-oriented training approach allowed players to learn and internalize the skills in a more efficient manner, resulting in faster development and improvement. Based on our data, we found that the created innovative training methodology in ice hockey technique offers a significant improvement in the process of motor actions refinement and tactical construction of dynamic situations.

Key words: improvement methodology, tactics, performance

INTRODUCTION
Ice hockey is a high-intensity team sport that requires sport-specific technical skills (1), as well as physical attributes such as strength, speed, and agility. (2) Although ice hockey is not very developed in Bulgaria, things look different at the world level. In fact, there are now more than 1.5 million players worldwide, in more than 75 countries. (3) Since the last decade, the internationalization of hockey has led to an intensification of the physiological, muscular, and technical-tactical requirements to perform, both for professionals (5, 6) and youth. (7, 8)

Ice hockey is a physically demanding contact sport involving repetitive bouts of high-energy output. (9, 10) Due to the specifics of the game, many authors believe that tests and trials should be carried out only on ice. (4) The periodic characteristics of a hockey game, including typical movement patterns and the length of play required during play has been previously considered in order to create an Ice Hockey Specific Complex Test (IHCT). (11, 12)

Ice testing is important in hockey because its professional coaches, general managers and scouts consider skating ability to be an important factor in selection players for a team. (13) Considering the importance of physical dominance in the ice hockey, evaluators have always placed considerable importance on this facet of talent appraisal. (14)

Such demands become a challenge for coaches and strength and conditioning trainers, who must ensure that their athletes stay at the top of their game while respecting their ability to adapt to the demands of a season. (15) The seminal work paved the way to our understanding of key variables that are required to excel in ice hockey. (16)

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The innovative training methodology in ice hockey technique offers improvement because it focuses on developing motor actions and tactical understanding of dynamic situations through repetition and specific task training. This approach allows players to learn and internalize the skills required for successful play in game-like situations, leading to more efficient and effective performance on the ice. By utilizing a variety of drills and training exercises designed to simulate the demands of a game, players are able to develop a better understanding of how to use their skills in a variety of situations, resulting in improved overall performance. The innovative training methodology in the ice hockey technique has proven to be effective in skating and puck handling and passing techniques because it emphasizes repetition and specific task training in game-like situations. Players practice and refine their skills through a variety of drills and exercises that mimic the demands of a game. This allows players to develop a better understanding of how to use their skills in a variety of situations and to identify areas for improvement. The focus on repetition helps to ingrain the correct technique and mechanics into muscle memory, leading to more efficient and automatic execution in game situations.

The innovative methodology also prioritizes the development of decision-making skills and tactical awareness, essential components of effective play in ice hockey. By combining technical skill development with tactical understanding, players can improve both their individual skills and their ability to contribute to the team's success.

The key components for successful play in ice hockey are strength, speed, power, acceleration, agility and balance (17-19).

In support of the set goal, were identified the following tasks: to study the influence of the learned technical techniques on the tactical tasks set and to track the improvement of tactical tasks in the development of training.

**MATERIALS AND METHODS**

To achieve the above objectives, 20 children (10-12 years old) - boys, randomly divided into control and experimental groups - were examined. The control and experimental groups consisted of 10 players each. The training program consisted of a 12-week long cycle. The first study was done at the beginning of the long cycle, and the second, respectively, at its end.

All competitors were tested on the same day and under the same conditions. The purpose of the drill is to mimic the basic requirements and skills involved in an actual ice hockey game. The tests were divided into four areas: forward sprint 36 m, forward sprint 9 x 6, slalom sprint, sprint x8.

The parents of all participants gave informed consent to perform the tests. The study was conducted in accordance with the Helsinki Declaration of Human Rights and in accordance with the codes of ethics of the National Sports Academy “Vasil Levski”.

The data of the study were arranged in the direction of special indicators aimed at skating with the specific tests investigating endurance 9x6 and slalom skating, speed - 36 m. and mastered technique - skating x 8. The tests were timed using manual stop watches (Accusplit Pro Survivor 601X).

In conducting the developing experiment, through the innovative enriched methodology, the technical elements of skating forward, backward, sideways, with cross steps, starts, types of stops, turns, jumping over obstacles and other technical skills that require mastery were arranged and systematized. Complex puck handling exercises with tactical tasks when working with a partner are required, bringing training closer to real hockey. It is possible at this stage to build and apply combinations in attack and defense in game situations. The refinement of these components of the tactic creates conditions for transitioning to different forms of competition - small games, competitions within the team, between clubs, state championships, etc.

The basis of the improvement of the set tasks are the motor sensations and perceptions in most cases combined with the visual and auditory ones. In this period, automated movements come to the fore. Certain tactical tasks are set according to the level of the competitors.

Through the process of improvement, in this part of the improved methodology, automation and individualization of technical and tactical techniques are carried out, performances are created in different situations through the built supporting leading elements. Thus, technique is formed in the process of adaptation to motor tasks, which improves the coordination and efficiency of motor actions.
By emphasizing and bringing out the supporting moments and individual elements, it is possible to improve and implement them in dynamic game situations. After the repeated repetitions with tactical tasks in attack and defense, a joint discussion is held - a debriefing between the coach and the competitor. Making sense of the analysis and making the corrections lead to automation of the supporting elements.

The activity created in this way in the athlete's training process has a significant impact in the competitive environment when setting the tactical tasks.

The created visual-motor representations, the constructed image of the movement support the creation and construction of a mental program of action, and hence the creation of readiness to perform tactical tasks in attack or defense. The tactics that are formed in the process of adapting to the set tasks improve coordination and efficiency in the execution of actions.

The role of the coach is important here, as he supervises the performances in a technical aspect and supervises the implementation of tactical tasks. When reporting mistakes of a technical, tactical and functional nature, he is able to make the necessary corrections and on the basis of which the competitor makes his choice of correct actions. After reporting the efficiency, the participations in the types of competitions are included (Figure 1).

In optimizing the improvement, the reliability of the information in obtaining feedback from the cumulative effect in the training work is important. On this basis, the most effective combinations of elements and methods can be searched according to the stage of preparation and the introduced corrections.

The bilateral process is a process of information exchange that requires a high degree of organization of the coach-athlete system to achieve maximum effect with minimum loss of energy and information losses Figure 2.

Descriptive statistics were calculated to include mean standard deviation (SD) and minimum and maximum values with all variables examined for normal distribution. Means and standard deviations of all variables were calculated and Assumptions of growth in individual groups were tested using the Student T-test. Analyzes were performed using SPSS software (version 29) and MS Office Microsoft excel.
RESULTS
The average values of the performance measurements taken in the first and second studies are presented in Table 1. Descriptive statistical analysis shows a difference between the first and second studies, which is due to the work with the control and experimental groups.

The results of the experiment of the two groups are presented in Table 2. In the data from the measurement of Forward Sprint 36 m at EG, an increase of $d=-0.90$, $X_1=8.14$, and $S_1=0.16$ was recorded at the first measurement. In the second measurement $X_2=7.24$, and $S_2=0.37$, at $t_{emp}=7.60$. In CG, in the first measurement, an increase of $d=-0.04$ and $X_1=8.10$ and $S_1=0.18$ was registered, while the second measurement showed $X_2=8.05$ and $S_2=0.21$, at $t_{emp}=1.20$. The positive changes in both groups are due to the educational and training work. In EG, however, the better results are due to work with the improved methodology, which is supported by statistical reliability $P(t)=100$.

Of interest are the results obtained when measuring forward sprint 9x6. At the first measurement of the data of EG $X_1=19.93$ and $S=0.31$. The second measurement shows $X_2=18.70$ and $S_2=0.50$. The increase amounts to $d=-1.22$, and $t_{emp}=6.21$. The compared data of KG in the first measurement show $X_1=19.89$ and $S_1=0.31$, and in the second measurement $X_2=19.58$, $S_2=0.38$. The increase is $d=-0.32$ at $t_{emp}=3.32$ and $P(t)=100$. The analysis of the data from the two groups shows a development of those of the EG, which is an indicator of the positive influence of the innovative training methodology on improvement and tactics in training. This is an indicator that the innovative methodology has a developing effect on EG.

Slalom skating is characteristic of ice hockey technique in all lines of attack. This is very close to the natural behavior of the hockey player in the given tasks. These actions show the built-up sense of quickly reacting to the obstacles that appear and sharply changing the direction of movement. The obtained data from the EG studies in the first study show $X_1=17.09$ and $S_1=0.81$ in the first study. In the second study $X_2=15.63$, $S_2=0.40$. The increase is $d=-1.47$ and $t_{emp}=4.22$. The CG results were $X_1=17.32$, $S_1=1.00$ in the first study, and $X_2=16.94$ and $S_2=0.73$ in the second study. The increase is $d=-0.38$ at $t_{emp}=2.61$ and $P(t)=100$. The data analysis shows the well-mastered technique in EG as a result of the applied improved training methodology, which positively affects the improvement process as well.

Skating x 8 is close to real skating when performing set tasks in attacking combinations. EG obtained $X_1=26.27$, $S_1 = 0.87$ in the first measurement and $X_2=22.16$ and $S_2=0.44$ in the second measurement. The increase amounts to $d=-4.11$ and $t_{emp}=14.25$. The data of the first examination of CG were $X_1=27.26$ and $S_1=0.54$. The second measurement showed $X_2 = 25.81$, $S_2 = 0.66$. The increase in KG shows $d=-1.45$, $t_{emp}=4.65$.
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<tr>
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<th>N</th>
<th>Range</th>
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**Table 2. Results of the experiment**

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<th>Indicator</th>
<th>n</th>
<th>First Research</th>
<th>Second Research</th>
<th>d</th>
<th>d%</th>
<th>t_emp</th>
<th>P (t)</th>
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<td></td>
<td></td>
<td>X1 S1</td>
<td>X2 S2</td>
<td></td>
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<tr>
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<td>0,87</td>
<td>22,16</td>
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<td>-4,11</td>
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</table>

**Legends**
FS 36 m – Forward sprint 36 m, FS 9x6 – Forward sprint 9x6, SS – Slalom sprint, Sx8 – Sprint x8
I – First study, II – Second study
CG – Control group, EG – Experimental group

**DISCUSSION**
The improvement in all indicators of the specialized tests of EG is obvious. The influence of the innovative methodology should also be taken into account in the general functional state of the examined persons. This is a normal process. It is not possible to perform the technique, the tactical tasks, mastering the dynamic situations without improving the physical condition. This process, the goal of which is maximum efficiency with relatively minimal stress and energy consumption, is a basic "choice of the best expedient option from all options" (20). Clarification of the main methodological questions needs to search and find a model for training and improvement by which prediction of realization is possible. In addition, it is necessary to provide continuous control and evaluation according to the applied innovative methodology.

**CONCLUSIONS**
The improved training methodology in the technique of ice hockey has a positive effect on the subsequent processes of improvement and deployment of specialized skills when setting tasks. Its influence is positive in working out the tactical tasks and developing methods and means for evaluating and controlling the performances of the competitors. Through the innovative training methodology, in addition to improving the specialized techniques, the physical capabilities of the competitors are also improved. The working hypothesis of the development has been confirmed.
REFERENCES