

Transfer control standards for special training of hockey players undergoing sports training

UDC 796.966



PhD, Associate Professor **V.G. Medvedev**¹

PhD, Associate Professor **A.P. Davydov**¹

¹The Russian University of Sport «GTSOLIFK», Moscow

Corresponding author: biomechanics@bk.ru

Received by the editorial office on 04.11.2024

Abstract

Objective of the study was to establish guidelines for the development and implementation of training protocols for elite hockey players.

Methods and structure of the study. The findings from the assessment of 135 hockey players, representing a diverse range of abilities and positions, spanning various age groups (from 9 to 19 years old), were utilized for the purpose of this study. The assessment focused on evaluating the following motor skills of the players: the speed at which they acquire the puck, their agility, and their ability to throw the puck with precision.

Results and conclusions. Based on pre-established regression models that enable the extrapolation of the data obtained, and considering the duration of the phases of sports training and the age of individuals for enrollment in these phases in the sport of hockey, control and transfer standards for years and phases of training are proposed: the initial training phase (8 years), the training phase (11 years), the improvement phase of sports skills (15 years), and the phase of advanced sports skills (17 years). The proposed transfer standards are recommended for use in the educational and training process as part of the gradual monitoring of the fitness of hockey players. The article provides a comprehensive explanation of the proposed tests and the method for calculating the necessary indicators.

Keywords: examination, special tests, sports result, sports preparedness, hockey, testing, stage control, standards.

Introduction. Previously conducted studies allowed us to select the most informative indicators among many indicators assessing the special motor readiness of hockey players and which change significantly with the age and qualification of hockey players [1-4]. Special motor abilities in hockey should include three types of speed: speed of puck control (the ability to control the puck in minimal time for further controlled control of the puck), maneuvering speed (the ability to quickly move on the ice, including with the puck and changing the direction of movement), throwing speed combined with accuracy (the ability to hit the target zone in minimal time) [1, 4]. These abilities of hockey players can be assessed using tests such as: 16 m skating; 16 m straight puck dribbling; puck dribbling with dribbling (to the right and left sides); receiving the puck until complete control; throwing into the target zone (convenient and inconvenient side). In

these tests, it is recommended to consider the following indicators for assessing age dynamics: duration of puck reception until complete mastery (average value for 10 attempts), coefficient of variation of duration of puck reception until complete mastery (over 10 attempts), duration of 16 m run on skates (average value for 3 attempts), duration of 16 m straight puck dribbling (average value for 3 attempts), duration of puck dribbling with dribbling over a 16 m section (average value for 3 attempts), speed of probability of throwing a puck (over 10 throws into the target zone).

Objective of the study was to establish guidelines for the development and implementation of training protocols for elite hockey players.

Methods and structure of the study. The study used the test results of 135 hockey players of various qualifications and positions in a wide age range (from 9 to 19 years). Based on the pre-developed regres-



sion models (statistical significance of the regression equations $p \leq 0.05$), allowing extrapolation of the obtained data [4], and taking into account the duration of the stages of sports training and the age of individuals for enrollment in the stages of sports training in the sport of hockey, control and transfer standards were calculated by years and stages of training: initial training stage (8 years), training stage (11 years), stage of improving sports skills (15 years), stage of higher sports skills (17 years). The standards are defined for the indicators of such tests as: 16 m skating; 16 m straight puck dribbling; puck dribbling with dribbling (to the right and left sides); puck reception until complete mastery; throw into the target zone (convenient and inconvenient side).

Results of the study and discussion. To assess the special training of hockey players, it is recommended to follow the following testing procedure.

Receiving the puck until you have full control. The sender and the receiver (tested) player are located at the face-off points (distance 14 m). The start of the reception duration is the moment the puck leaves the sender's stick. The end of the reception duration is the moment the puck comes to a complete stop while simultaneously maintaining contact with the receiver's stick. Video recording is performed using a camera with a shooting frequency of at least 50 frames per second. Based on the results of video analysis (timing) in 10 attempts, such informative indicators as the average value and the variation coefficient of the puck reception duration are calculated. To increase the reliability of the test, different "transmitters" should not be involved; if possible, the passes should be performed by the same person (with the necessary rest intervals between the subjects). The number of attempts (passes) is 10. The angle (sector) of the puck's flight dispersion is 15° . The task for the athlete is to gain control of the puck as quickly as possible, performing the technique as follows: the puck must be completely stopped (motionless), while the blade of the stick must be in contact with the stopped puck.

16m skating. The test subject's task is to skate on ice as fast as possible, starting from a designated start line (free start). The time count begins when the player crosses the start line and ends when he crosses the finish line. To improve the accuracy of measuring the duration of the skate run, it is recommended to use optoelectronic pairs located at the edges of the recorded segment. An alternative option is video recording with a frequency of at least 100 frames per second. To im-

prove the reliability of the test, after a trial attempt, the athlete must be given 3 attempts to complete the test (taking into account the rest intervals between attempts), and the result in the test will be determined as the average value for three attempts.

Dribbling the puck straight 16 m. The requirements for completing the task are similar to the previous one. The specifics of dribbling the puck suggest the following: the puck, when dribbling, should not move more than 2–2.5 m away from the hockey player (the distance of an outstretched arm with a stick).

Dribbling the puck while performing a dribble over a 16 m area. The requirements for completing the task are also similar to the previous one. When completing the task, the athlete must go around all the obstacles without moving them.

Throw test. The athlete makes 10 throws of pucks located along the line passing through the final face-off points. Throws are made into the target zone – 1/9 of the goal area in the right or left corner. Each of the 10 pucks suddenly appears from under an opaque screen ($1,5 \times 1,5 \text{ m}^2$, which does not allow you to see the arrangement of the pucks), which gradually reveals (moving from the center) one puck at a time. Using video analysis equipment (with a shooting frequency of at least 50 frames per second), such indicators as the probability of scoring (the percentage of the number of pucks scored to the total number of throws) and the average duration of a throw in a series (the average duration of all throws made in a series) are determined. The calculated indicator is the rate of probability of scoring (the ratio of the probability of scoring to the average duration of a throw). Based on the developed regression models [4] and taking into account the duration of the stages of sports training and the age of individuals for enrollment in the stages of sports training in the sport of hockey, control and transfer standards are proposed for years and stages of training in the sport of hockey in accordance with the requirements for the results of the implementation of the sports training program in the sport of hockey at each stage of sports training, the fulfillment of which provides grounds for transferring an individual undergoing sports training to the next stage of sports training based on the results of special tests conducted on the ice (see table).

Conclusions. The proposed control and translation standards are recommended to be used in the educational and training process as part of the stage-by-stage control of the readiness of hockey players.



Control and transfer standards by years and stages of training in the sport of hockey, the fulfillment of which provides grounds for transferring a person undergoing sports training to the next stage of sports training (based on the results of special training tests)

An indicator of an athlete's motor ability	Stage of sports training (age)			
	Basic training (8 years)	Training (11 years)	Improving sports skills (15 years)	Highest sportsmanship (17 years)
Duration of receiving the puck until full control (average value), s (no more)	2,1	1,9	1,7	1,5
Variation coefficient of the duration of receiving the puck until full control, % (no more than)	95	85	72	65
Duration of 16 m run on skates, s (no more)	3,17	3,08	2,96	2,90
Duration of puck movement straight 16 m, s (no more)	3,27	3,19	3,07	3,01
Duration of puck dribbling with dribbling on a 16 m section, s (no more)	3,84	3,70	3,51	3,41
Puck scoring rate (shots into the target zone), %/sec (not less than)	17	23	31	35

References

1. Medvedev V.G., Medvedeva E.M., Davydov A.P., Napalkov K.S. Informativnyye pokazateli dvigatelnoy podgotovlennosti yunyh khokkeistov. Teoriya i praktika fizicheskoy kultury. 2023. No. 1. pp. 8-10.
2. Medvedev V.G. Skorost veroyatnosti zabrasyvaniya shayby kak pokazatel spetsialnoy podgotovlennosti khokkeistov pri vypolnenii broskov. Sport – doroga k miru mezhdru narodami. Proceedings of the VI International scientific-practical conference, October 26-28, 2022. Moscow: RUS «GTSOLIFK», 2022. pp. 140-143.
3. Medvedev V.G., Medvedeva E.M., Davydov A.P. Regressionnaya model spetsialnoy dvigatelnoy podgotovlennosti khokkeistov razlichnykh vozrastnykh grupp. Teoriya i praktika fizicheskoy kultury. 2024. No. 1. pp. 14-16.
4. Medvedev V.G., Medvedeva E.M., Davydov A.P., Shalmanov A.A. Regressionnaya model obshchey dvigatelnoy podgotovlennosti khokkeistov razlichnykh polovozrastnykh grupp. Teoriya i praktika fizicheskoy kultury. 2023. No. 2. pp. 18-20.