

Original Article

Talent Selection and the Present? The Way Sports Preconditions Are Determined in SlovakiaPerič Tomáš^{1*}Ružbarský Pavel²¹Charles University, José Martího, Prague 6, 15800, Czech Republic²University of Presov, Ul. 17. novembra 15, Prešov, 08001, Slovak Republic

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Keywords: *individual motor profiles, nationwide testing, methods for determining sports preconditions***Abstract**

Talent selection includes a variety of issues that may be classified into several domains following one another (talent determination, talent searching, talent selection, and so forth). One of the most important domains is the determination of sports preconditions – talent (particularly from the viewpoint of assessment and prognosis). The assessment of sports preconditions is based on four domains: somatic parameters, manipulative skills, decision making, and conditioning. The example of the Slovak Republic is presented to demonstrate how sports preconditions are assessed in 6-year-old children. In the pilot study data were collected from 1,669 children (boys: $n = 880$; girls: $n = 789$) who performed 12 physical fitness tests. The children attended three types of school: schools with large numbers of students, schools with medium numbers of students, and schools with small number of students, respectively. Data collected from children who were from eight Slovak regions were compared by gender and region in particular physical fitness tests using the contingency tables.

1. Introduction

The domain of talent selection in sports is a considerably extensive and interesting subject of research in the field of sports sciences. A large number of researches conducted abroad and also in Czech Republic and Slovak Republic, document the fact that the scientific community addresses this issue. In Czech and Slovak Republic, respectively, talent selection was most studied in the 70s

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and 80s of the 20th century. The change in the political situation in both countries caused significant decline in research aimed at talent in sports from both practical and theoretical viewpoints (cancellation of sports classes, youth training centers, and centers for elite athletes). This was caused by social changes and their consequences on the one hand and also by the exhaustion of the positivistic research paradigm, from which the theory of talent selection evolved, on the other hand.

At present the domain of talent selection and development in sports enjoys a revival. Large funds are allocated to run the rediscovered sports classes and centers for youth talented in sports. However, another paradoxical phenomenon has occurred – a lot of "traditional" sports face a serious problem of low numbers of children in clubs. Therefore, as for youth training in a variety of sports, new ways are sought to attract children interested in the particular sports event but not to determine the prospects of the individual. Maybe the coaches in two most popular sports (soccer and ice hockey) have the possibility of selecting players for the latter stages within the system of long-term training.

A new way of addressing the issue includes:

1. The adoption of the Concept of State Policy in the field of sports – Slovak sports 2020 on December 19, 2012. One of the primary aims is to increase the quality of training in youth talented in sports and to increase the efficiency of selecting sports talents.
2. The adoption of Act No. 440/2015 Z. z., the new Sports Act, on November 26, 2015. The Act contains an essential requirement on testing of motor preconditions in children who attend 1st and 3rd grades at elementary schools.

The selection of sports talents is one of the serious issues within the field of sports training. The relevance of selection increases in sports that require substantial funding for equipment and that enable the athletes to earn large income. Therefore, a great emphasis is placed on the efficiency of selection and training of athletes not only by the children themselves (or their parents who cover the initial financial costs) but particularly by sports associations and clubs.

The domain of searching for and selection of sports talents currently employs an intuitive approach – without "a scientific point of view". Therefore, talent searching is not a purely a scientifically theoretical task but rather a strongly practice-oriented task.

Sports theoreticians and practitioners who deal with the selection of sports talents agree, in effect, on the fact that the execution of rational selection is an inevitable need in elite sport. The issues may be referred to as the determination of sports preconditions to conduct selection. This task may be viewed from two basic perspectives (Baur, 1988):

- testing (the issue of criteria), i.e. identification of performance parameters after achieving elite performances
- prediction (the issue of predictors), i.e. performance indicators, at the age when the indicators did not reach their full level. From a prediction-oriented viewpoint, prediction-able predictors are those that:

- are already measurable at the time of assessing talent
- are developmentally most stable over the long period of prediction.

Difficulties arise as early as the issue of criteria. So far, there is no safe and detailed knowledge about which physical, somatic, and mental faculties and at which level and in what combinations, have positive effect on performance in particular sports (Gabler, & Ruoff, 1979; Wendland, 1986). The sample of these faculties is currently referred to as the structure of giftedness (Brown, 2001; Joch, 2001; Reilly et al., 2000).

“The structure of talent” may, however, be understood as a complex “globally agglomerated criterion”, which consists of a large sample of “partial variables.” There is little evidence on the number, composition, mutual interaction and feedback effect on the quality of “global criterion”. This level of knowledge and evidence allows for referring to the “structure of talent” as “black box”, the content of which remains more or less unknown and inexplicable. The consequence is that potential experts (such as coaches, scouts, etc.) cannot use an array of partial, independent variables during the evaluation process.

Therefore, what appears to be of primary importance is to define indicators that would allow:

- 1) description of the structure of talent (giftedness)
- 2) assessment of individual required domains of sports preconditions, if possible, with a high degree of stability from the viewpoint of further development
- 3) quantification under the conditions of the nationwide testing.

The conditions mentioned already show that this is a considerably demanding issue that requires great professional and organizational erudition.

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2. Material and methods

One of the relevant circumstances underlying the selection process is the objective, which determines the searching and selection of particular individuals. Talent selection is not a homogeneous process and the objectives for which experts search for athletes may differ considerably. The determination of sports preconditions in Slovak children was based in particular on (Perič, 2010): determination of appropriateness of an individual for a particular sports event – this includes the assessment of primary preconditions for the focus of an individual. This assessment may be conducted:

- at the general level, for instance, selecting individuals for swimming, track and field, and sports games
- at the special level – selecting individuals for sprints or throws, or for crawl or breaststroke events.

All children of a particular age should undergo the assessment process. The process should result in the assessment of basic motor preconditions (1st grade), which will be tested later (3rd grade). The assessment of preconditions specified above should be used to design children's individual profiles, which will be applied in order to determine appropriate sports for particular children.

This approach places considerable emphasis in several domains:

- selecting appropriate indicators of motor preconditions;
- designing a rating scale / creating methodology for the assessment of motor preconditions for a particular group of sports events;
- developing a concrete system for the course of testing;
- designing a specific software for data collection and evaluation;

These demands grow even more because testing sessions should take place under the conditions of school physical education classes.

The entire system should bring positive results in two domains:

- 1) The determination of appropriate groups of sports creates good preconditions for children's success in selected sports events, which may make children more interested in active sports. The ancillary aspects may include increasing interest in physical activities and also improved achievements at international competitions.
- 2) The assessment of cohorts according to particular years of birth from both cross-sectional and longitudinal perspective. These data could be supplemented by data collected from children who attend other grades than those observed. This could create a unitary framework for the assessment of motor development of Slovak children.

3. Results and Discussions

As mentioned above, the nationwide testing of children for the assessment of sports preconditions is a highly demanding task from both a professional and organization perspective. The preparatory work may therefore be divided into four basic stages (and their substages):

- 1) Determination of variables that form the criterion of "preconditions for sports" – the structure of talent (giftedness)
- 2) Selection of methods for the operationalization of variables
 - Designing of individual sports profiles
- 3) Testing of options for the operationalization of variables
 - Verification of individual profiles
 - Designing software for recording and assessing preconditions for sports
- 4) Testing of cohorts
 - Creating norms for particular cohorts and indicators
 - Designing movement types

Work during the first research stage primarily aimed to set up an expert commission in order to propose factors and variables used to define the criteria of "sports preconditions". The expert group consisted of university teachers ($n =$

5), experts in the field of talent identification. The experts had to be at least associate professors. The expert commission formulated results on the basis of qualitative research that was done in form of individual and group interviews under the supervision of the head of the expert group.

The group interviews were used to define basic domains of motor preconditions, which were based on the general theory of sports performance structure. The theory defines five basic factors underlying the structure of individual performance (Dovalil, 2012):

- 1) Somatic factors
- 2) Conditioning factors
- 3) Technique factors
- 4) Tactics factors
- 5) Personality factors

When evaluating the options for the assessment of motor preconditions, the expert commission concluded that only four factors that determine the structure of sports performance may be assessed in practice under the conditions of school physical education: conditioning, technique, tactics, physique.

The personality factor was excluded from the assessment due to:

- demanding assessment of personality traits in 6- and 7-year-old children,
- low level of stability of these traits caused by ontogenetic changes.

When evaluating the options for the assessment of motor preconditions, which are based on the above-mentioned factors of sports performance structure, the expert commission decided to choose the following domains:

1. age of subjects
2. somatic parameters
 - body height
 - body weight
3. assessment of motor abilities
 - conditioning
 - coordination
 - elastic
4. preconditions for object control (for the domain of nonspecific preconditions for technique)
5. preconditions for decision-making processes (for the domain of nonspecific preconditions for tactics).

The last domain that the expert commission dealt with during the first research stage was the determination of indicators to be used to evaluate individual domains. The basic aim was to attempt to select indicators with high validity in relation to the assessed criterion and with the highest degree of reliability possible. One of the conditions was to be able to test these indicators during physical education classes.

The most relevant condition was that the indicators had to be influenced as little as possible by children's previous movement experience (due to previous practice).

The domain of the assessment of somatic parameters included the measurements of body height and body weight. As regards motor abilities, the expert commission decided to test the levels of individual motor abilities, including the blending of some of the motor abilities. Therefore, a basic structure was designed (Fig. 1):

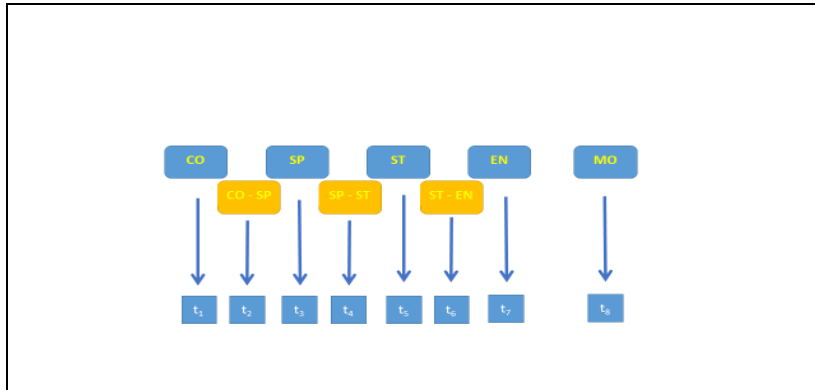


Figure 1. Structure of indicators for the assessment of motor abilities

Depending on their validity, reliability, and simplicity, the following motor tests were selected (Table 1):

Table 1. Selected motor test for the assessment of motor abilities

Motor ability	Test	Reliability (r_{stab})
Coordination	Routine with a stick	0.95*
Speed and coordination	4 x 10 m shuttle run	0.90*
Speed	50-meter sprint	0.90*
Speed strength	Standing long jump	0.93*
Strength	Flexed arm hang	0.80*
Strength endurance	Sit-ups in 1 minute	0.80*
Endurance	Endurance shuttle run	0.93**
Flexibility	Sit-and-reach test	0.97*

*Legend: Reliability coefficients are cited according to * Měkota, Blahuš, 1983, ** Liu, Plowman, Looney 1992.

A highly specific domain was the one aimed to assess decision-making processes. At primary level, the basic requirement was to select a simple, easily understandable and easy-to-administer indicator. The group interviews yielded a proposal for having children play games that children know, which makes the games simple to organize. Several games were proposed and three games with highest degree of logical validity, as determined by the expert commission, were

chosen. The game chosen was the flag chasing game during which children had to steal color flags from each other, the so-called flag chasing game.

As for the manipulative skills, the expert commission chose three tests that, from the perspective of validity, assess the level of manipulation and do not primarily depend on the previous movement experience. Similar to the domain of decision-making indicators, the commission chose the test that required children to roll three balls over a specific course (test of rolling three balls).

The objective of the second research stage was to operationalize particular indicators. Regarding the assessment of indicators, the expert commission decided that the raw scores had to be converted to standardized scores in order to determine individual movement profile. All indicators were divided into two basic groups:

1. standardized indicators – these indicators include the ones for which there is a known and available rating scale for the assessment of:

- development of motor abilities,
- somatic parameters,
- manipulative skills.
- nonstandardized indicators – the option of using the interval scale
- test (chasing game) was assessed using the interval scale.

The second principal objective of the second research stage was to design individual sports profiles. These profiles had to correspond with the requirements related to the structure of sports performance for particular sports within a specific sports specialization. From a logical viewpoint, several issues had to be addressed when designing the models specified above. The main issues addressed were to:

1. determine if and which indicators were evaluated using the positive or negative selection (Perič, 2006);
2. assess if all indicators have the same relevance for the computation procedures;
3. determine if the results of particular indicators or greater units (factor structures) are to be used, and so forth.

Ad 1) When dealing with the issue above the expert commission formulated basic theoretical perspectives that showed that both the negative model and the positive model of selection would be used:

1. negative for indicators:
 - body height
 - body weight
 - manipulation
 - decision-making processes
2. positive for indicators
 - Assessment of motor abilities

The model of negative selection aimed to determine sports for which children did not meet one of the basic requirements (e.g., sufficient body height

for the high jump, and so forth). On the contrary, the model of positive selection aimed to determine the best precondition for particular types of sports.

Ad 2) The assessment of motor preconditions itself is based on the structure of individual sports profiles. The structure includes indicators at three level of significance:

- Significant – high levels of performance may not be achieved without showing appropriate levels of the indicators;
- Common – high levels of performance may not be achieved with the corresponding level of these indicators;
- Nonsignificant – there indicators have minimal effect on performance.

Two significant indicators were chosen for each of sports specializations. The benefits of nonsignificant indicators were based on the higher degree of relevance. Also, two nonsignificant indicators, which were not included in overall assessment, were chosen as well.

To compute motor preconditions, a factor structure of latent variables was designed. The variables were referred to as: speed preconditions; strength preconditions; endurance preconditions; coordination preconditions.

The third research stage included a pilot study that aimed to determine the administering of particular indicators. The initial assessment revealed three principal issues:

1. Speed test – 50-meter sprint
2. Manipulative skills test – rolling of three balls
3. Decision-making test – flag chasing game

Fifty-meter sprint

As for the 50-meter test administration, the pilot study revealed issued to be addressed in two domains:

- Transition from the gymnasium to the playground
- Poor conditions in a situation without a school playground available.

The transition from one environment to the other in particular caused serious organization-related problems. The problems included children's changing clothes and shoes. It was also found that a high percentage of Slovak schools did not have a suitable playground for the administration of the 50-meter test. Therefore, the 50-meter sprint was excluded from the test battery.

According to the facts above, the expert commission proposed an option of predicting levels of speed abilities by administering the standing long jump test and the shuttle run test, respectively.

Predictive validity values are presented in Table 2.

Table 2. *Predictive validity values for the 50-meter sprint (n = 407) $p_{0.01} = 0.13$*

Predictive validity coefficient	Prediction 50 m - Total	Prediction 50 m boys (n = 220)	Prediction 50 m girls (n = 187)
50-meter sprint	.680	.754	.601

The data above show both a high degree of relationship and a certain risk of data distortion, especially in girls.

Manipulative skills test – rolling of three balls

As defined by Měkota, & Blahuš (1982), when administering this test, individuals have to roll three balls around three pieces of the vaulting box. However, this organization was too long for 6- and 7-year-old children (around 2 to 4 minutes), which caused inappropriate length of test administration and the decline in children's concentration due to long-term monotonous activity. The expert commission thus decided to shorten the test by using only two pieces of the vaulting box, which reduced the test administration time to one minute only.

Flag chasing game

When playing the game, children try to pull as many cloth flags as possible from their opponents without having their flags pulled. The total score is the number of stripes a child pulls during the game. What may cause difficulties is the various number of players. If the game is played by a significantly lower number of players (this situation may occur when the game is played by children who attend schools with low number of students), the total score may be affected and the players thus have the chance to pull fewer flags than when the game is played by a larger number of players. The situation was solved by creating coefficients using which the total score was adjusted and which was based on the actual number of players who participated in testing.

Fourth research stage was significant in determining the actual options under the conditions of regular schools. Therefore, the testing sessions took place in all regions of the Slovak Republic ($n = 8$). Children in each of the regions attended three types of schools:

- 1) Schools with large numbers of students and classes (mostly in big cities);
- 2) Schools with regular numbers of students and classes (mostly in smaller cities and central villages);
- 3) School with minimum number of students and classes (usually located in villages).

Overall, 1,600 children (Boys: $n = 880$, Girls: $n = 789$, $N = 1669$) were tested.

The results and the test score were used to devise norms by age and gender cohorts. Also, a contingency table was compiled to compare and determine principal differences in results for individual indicators by regions, cohorts, and types of schools.

The results showed certain differences that could be caused by lower numbers of children in the particular evaluated groups and also by the random incidence of extreme scores.

The identification of sports preconditions is the field of sports training theory that poses one of the greatest challenges to sports experts, teachers, and coaches. This is caused in particular by the long time during which individual aspects manifest themselves, the complexity of these manifestations, and to a

large extent by the latent character of the demands placed on prospective performance. Therefore, studying principles that lead to the assessment of the preconditions for sports performance is a complex topic, which, on the other hand, allows the simplification of the approach and promotion of efficiency of the processes of long-term sports preparation.

When preparing the testing sessions and testing children posed a lot of complex problems to be solved at the methodological, logical, organizational, and administrative levels. Despite significant changes some areas still remain critical. Among the most principal ones are:

- The assistance provided by teachers who will conduct the testing itself, which relies on:

- Responsible approach of particular teachers who will measure and record the test scores achieved by individual children.

- The use and full functionality of software necessary for testing organization and administration. The software was designed to facilitate the testing conducted by teachers.

- High-quality manual and training for teachers at particular schools. These sessions of training have to focus not on testing only but also on the software in order to have teachers use the software with high user quality

- Organization of schools without any gymnasium available and dealing with testing when more schools cooperate when testing.

- Organization of field days at schools where the testing sessions will take place. This places demands on:

- Activity of senior physical education teachers who should be responsible for the organization of field days and testing itself

- The assistance from sports associations and clubs, especially when organizing, children, testing sessions and test scores evaluation

- Basic material equipment that every school should have and that is to be available at every school (Ministry of Education).

4. Conclusions

The nationwide testing of motor preconditions in 1st and 3rd grade children is approaching the end of the preparatory phase. The main objective will be to:

1. Specify particular groups of sports for which children demonstrate best preconditions

2. Thus the purpose of testing:

- Is not to assess sports preconditions only in "athletically gifted children"

- Is also to propose appropriate sports activities for children who will never engage in organized sports training sessions.

Positive emotions, experience and feeling of success are the basic preconditions for children adopting a lifetime positive attitude towards sports and to incorporating sports into their daily lives.

Only these requirements will enable us to:

- Increase physical activity levels in children
- Promote children's health
- To have children engage in sports activities
- To improve the results achieved by national teams.

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