

## Original Article

### Contributions regarding sport selection and orientation for the first formative stage in athletics

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#### Abstract

**Background.** Skill-related potential generates the premise of efficiency and performance in sports, and its assessment determines an adequate orientation of youths towards various sport disciplines. Selection and orientations become in this context essential actions for professional sport, generally speaking, and for professional athletics, particularly speaking.

**Aims.** Initiation of athletics promoting activities for the first formative stage, by using a broader range of events and tests from the motility, psycho motility and coordinative area, correlated with 9 to 12 age's particularities and sportive orientation within scholastic environment.

**Methods.** Observation, direct and indirect, experiments, tests and measurements (driving tests provided by FRA and the "Tapping" tests, the Hexagon test, the Quadrant test, the T test, the Vertical jump test, the Matorin test, the Square test, the Dynamic balance measurement test, the Standing balance test, the Stork balance test, the Flamingo test), statistical mathematics, graphical analysis.

**Results.** The analysis of the testing results highlights the development level of skills being tracked; the subjects could thus be guided towards the appropriate athletics event.

**Conclusion.** By diversifying the array of selection trials for the first formative stage via the introduction of some tests for evaluating psychomotility and general and segmentation coordination has outlined clearer the children's native skills thus making is easier to offer correct guidance towards the various athletic disciplines.

**Keywords:** selection for the first formative stage, sporting guidance, to optimize

#### Introduction

Throughout the research process on the media coverage of athletics events it became obvious that unfortunately there are very few initiatives at the national level to promote this sport. Given the qualitative and quantitative (concrete data and figures from FRA) reasons we believe that the premises for increasing the number of children to partake in athletic events and practice the sports as such are to promote athletics in a sustained manner in the scholastic environment as well as to guide children interested in sports towards this particular field.

**Premises.** In the last few decades, the athletics field has recorded outstanding results, due to biological, social, economic, psychological, technological components, rendering natural selection insufficient (with exceptions); the science of sports has been incentivized to apply a scientific approach to guidance. Competition athletics must rely on an in-depth selection process of youth talent, due to skill-related potential that condition, encouraging / limited performance in this sport discipline and their orientation towards various athletics events.

#### Materials and methods

The sporting guidance method promoted has taken place under a common concept and has been developed based on the following timeframe:

- Phase 1 – (10 months) – activities to promote athletics having a general knowledge purpose – getting to know athletics as a sports field as well as a specific purpose – gaining students' interest so that they would be interested in participating in the trials, to ensure a wide base for the selection process;
- Phase 2 – (10 months) – trials among 9-12 year old students from 5 different counties based on tests for psychomotility and coordination skills needed to partake in competition athletics;
- Phase 3 – (4 months) – sporting guidance of the test subjects based on the compiled results and on set norms towards various athletics fields or even other sports; for the subjects guided towards athletics, filling in a regional tracking file for children that show promise toward competition athletics – a flexible tool, a database for initial selection by sports clubs.

In order to provide proof for the need to run through the array of trials and tests and control norms for the first formative stage selection in athletics we performed an analysis of the weight of the motion and psychomotility component by athletic groups of trials so as to outline the main prevailing skills. The elements identified in table 1 point out the fact that athletics is a complex sports field that requires the athletes a vast array of psychomotility and coordination skills: space orientation, ability to move sideways, coordination, rhythm, timing, balance, etc.,

skills which should be uncovered from the initial phase of the selection process in order to assess the individual's motion qualities for this sports field and thus guide the athlete accordingly.

Having in mind the vast array of trials in the athletics field for which future performers are selected and the complexity of motion and psychomotility skills required, the current selection system for the first formative stage of athletics in Romania has a limited numbers of tests, all physical, which do not provide specialists the ability to identify young people gifted for competition athletics and making the most out of the existing talent.

Thus, the selection trials provided by the FRA, *50m running with a stand-up start* and *600m running* are tests which should present the selection coach with the entire array of motion, psychomotility and coordination skills of each subject, skills needed for athletic challenges such as: speed running, relay running, hurdles and obstacles running, semifond running, distance and long distance. On the other hand, the selection tests outline only the level of development for reaction speed, movement and repetition for that subject and some general motion skills, without assessing balance, lateral motion, space-time orientation and segments coordination, key qualities for these athletic challenges. Long jump event from the jumps group, outlines some previously mentioned general motion skills but lacks elements that pertain to required psychomotility and coordination skills, such as: rhythm, timing, arms-body coordination, amplitude, positioning, dynamic balance and space-time orientation.

Oina throw from standing event, as a selection test of the FRA, from the throwing group, does not contain enough elements to assess required psychomotility and coordination skills: dynamic balance, limbs-body coordination, hand-eye coordination, space-time orientation, rhythm, timing. The analysis of the weight of motion and psychomotility components by athletic groups of trials shows that even though for athletics all psychomotility and coordination skills are required more or less, we consider most important and dominant the following ones: rhythm, coordination and balance. Thus, in developing the alternative selection system for the first formative phase in athletics, alongside existing motion tests, the trials pertaining to psychomotility and coordination skills would focus on the skills that we consider dominant: rhythm, coordination and balance.

During the selection/testing in the scholastic environment we employed the tests presented in Table 2.

Table 1. Skills needed for athletic events practice

Athletics events	Skills needed		Romanian system of primary selection
	Motility skills	Psychomotility and coordination skills	
<i>Speed running</i> <i>Relay running</i>	<input type="checkbox"/> speed (reaction execution of movement, repetition) <input type="checkbox"/> force; <input type="checkbox"/> resistance; <input type="checkbox"/> skill.	<input type="checkbox"/> rhythm; <input type="checkbox"/> coordination segment (upper limbs- lower limbs); <input type="checkbox"/> eye coordination-legs; <input type="checkbox"/> balance; <input type="checkbox"/> space-time orientation (especially the race of the relay); <input type="checkbox"/> ambidextrous	⇒ 50m running ;
<i>Semifond,</i> <i>distance and</i> <i>long distance</i> <i>running</i> <i>Marathon</i>	<input type="checkbox"/> speed under strength; <input type="checkbox"/> general strength; <input type="checkbox"/> resistance; <input type="checkbox"/> skill	<input type="checkbox"/> rhythm; <input type="checkbox"/> tempo; <input type="checkbox"/> balance; <input type="checkbox"/> segmental coordination	⇒ Long jump
<i>Hurdles and</i> <i>obstacles</i> <i>running</i>	<input type="checkbox"/> explosive force <input type="checkbox"/> dynamic flexibility <input type="checkbox"/> speed (reaction execution of movement, repetition); <input type="checkbox"/> resistance; <input type="checkbox"/> dynamic mobility;	<input type="checkbox"/> rhythm; <input type="checkbox"/> dynamic equilibrium; <input type="checkbox"/> coordinating arms - legs - trunk; <input type="checkbox"/> eye coordination-legs; <input type="checkbox"/> side; <input type="checkbox"/> spatial and temporal orientation ability	⇒ Oina throw;
<i>Jumps</i>	<input type="checkbox"/> speed (responsiveness, execution, repetition); <input type="checkbox"/> detention; <input type="checkbox"/> motor skill; <input type="checkbox"/> resistance; <input type="checkbox"/> force; <input type="checkbox"/> flexibility and mobility;	<input type="checkbox"/> distance; <input type="checkbox"/> amplitude; <input type="checkbox"/> direction; <input type="checkbox"/> position; <input type="checkbox"/> rhythm, duration; <input type="checkbox"/> dynamic equilibrium; <input type="checkbox"/> capacity space-time orientation; <input type="checkbox"/> arms-trunk-leg coordination;	⇒ 600m running;
<i>Throws</i>	<input type="checkbox"/> explosive force; <input type="checkbox"/> flexibility; <input type="checkbox"/> speed; <input type="checkbox"/> skill; <input type="checkbox"/> mobility and flexibility; <input type="checkbox"/> resistance;	<input type="checkbox"/> dynamic equilibrium; <input type="checkbox"/> arms-trunk-leg coordination; <input type="checkbox"/> oculo-manual coordination; <input type="checkbox"/> capacity space-time orientation; <input type="checkbox"/> rhythm; <input type="checkbox"/> tempo;	

Table 2. Preliminary selection tests for the first formative stage

Motricity tests	Rhythmicity tests	Coordination Tests	Balance Tests
50m running	“Tapping” Test	T Test	Dynamic balance measurement test
Long jump	Hexagon Test	Vertical Jump Test	Standing balance test
Oina throw	Quadrant Test	Matorin Test	Stork balance test
600m running	-	Square test	Flamingo test

Promoting, testing and orienting activities for pupils involved within the experiment took place according to a managerial plan which included the mission, objectives and activities with related-responsibilities. Athletics' promotion within scholastic environment has been done in an innovative manner, through an animated Power Point presentation, created according to receptive and understanding capacity of 9 to 12-year old children, which, in a simplistic manner, addresses some key aspects: athletics' history, main groups of athletics events and international raw models and national raw national with international best results. For advertising athletics as sport discipline in scholastic environment and for establishing the premises for the initial selection activity in this sport, we performed an advertising activity regarding athletics and its events in scholastic units from 5 counties, in 3<sup>rd</sup> to 6<sup>th</sup> grade (pupils from 9 to 12-year old).

Testing/selecting activity in the scholastic environment comprised 473 observations (pupils) from 5 cities: Arad, Timișoara, Deva, Reșița and Cluj Napoca. Tests and trials have been applied for identifying the development level of specific skills needed to detect talents, children with predispositions for professional athletics practicing, who may represent a selection database for sports clubs within these cities.

### Results

As a result of the wide variety of tests employed (15 tests), the different measurement units (repetitions, seconds, degrees and centimeters), the wide interval of the results recorded (difference between the best and the worst result recorded) on one hand and the differences in value of the subjects on the other hand, the resulting parameters present a broad range of values. (as shown in table 3)

Table 3. Statistical parameters' values for the observations' results at tests

Test	X	S	CV
Tapping Test	35.19	6.90	20%
Hexagon Test	19.70	5.44	28%
Quadrant Test	23.37	4.78	20%
T test	15.98	2.56	16%
Sargent/Vertical Jump Test	22.92	5.75	25%
Matorin Test - left	279.93	69.12	25%
Matorin Test - right	290.62	64.48	22%
Square test	7.93	2.83	36%
Dynamic balance	6.36	2.01	32%
Standing Balance Test	105.32	111.74	106%
Stork Balance Test	10.36	9.76	94%
Flamingo Test	55.56	48.23	87%
50m running	9.26	1.23	13%
Long jump	1.38	0.24	18%
Oina throw	18.55	7.42	40%
600m running	3.09	0.87	28%

The 15 tests employed for subject evaluation have been organized into four categories: rhythm tests, coordination tests, balance tests and motion tests (stipulated by the FRA).

Since the research has been conducted on a sample of students between the ages and 9 and 12, age level at which selection should be done for the first formative stage of athletics, the motion tests performed via the trials stipulated by the FRA yielded a high degree of homogeneousness. The variation coefficient of the results in this test group (13-28%) shows that the sample is relatively homogeneous (with the exception of the oina throw trials which recorded a 40% CV) therefore not allowing for an in-depth differentiation of the subjects which should allow for a proper sporting guidance for each subject.

When it comes to the rhythm tests, the degree of homogeneousness is noticeably lower yet still present (between 20 to 28%) as is the case for the coordination tests (16-36%).

As a result of the particulars in its test group, the balance group shows the broadest range of subjects' results, as reflected in the variation coefficient (32-106%).

The concrete result of completing the first two phases is the sporting guidance of all test subjects, resulting in a database of the subjects, results and norms – which allows for sporting guidance for athletics as well as other sports. The sporting guidance initiative cannot be completed in a constructive manner without a relevant sample

of test subjects, centralized results and existing or proposed norms. By constructive manner we mean that the guidance process is to be continued by training the potential talented individual within sports clubs. The ultimate goal of this phase is to create a “registry of potential competition athletes”.

The employment of trials and test for evaluation of psychomotility and coordination skills facilitated the process of sporting guidance for the children towards the various challenges of the athletics field, as shown in figure 1.

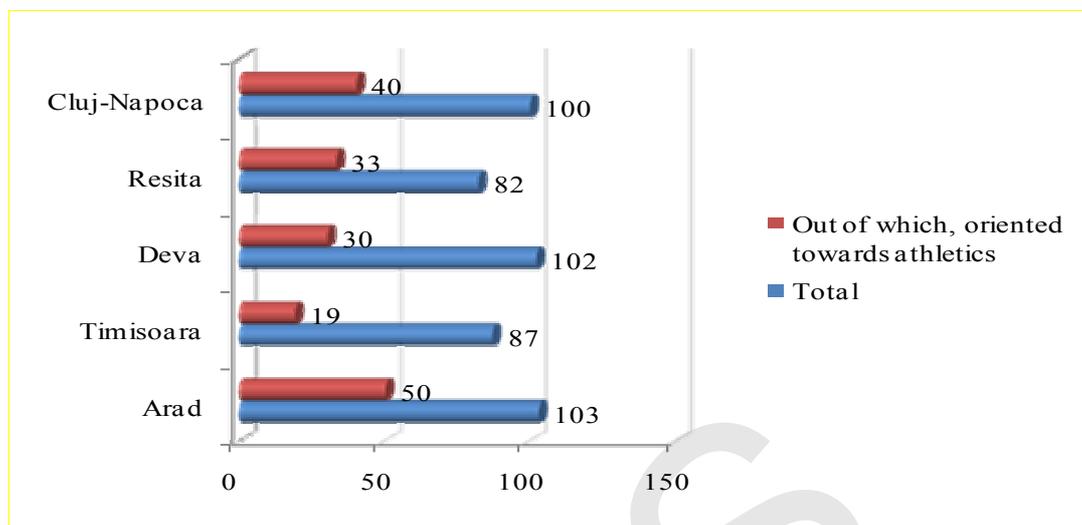


Figure 1. Total pupils oriented towards athletics events

As illustrated by figure 2, Arad students which showed skills required for athletics challenges have been guided mostly towards jumping events (42%) and throwing events (36%) but also toward short range running (14%) and long range running (4%). Students with relatively good results in more than one trial groups have been initially guided towards two groups 2% towards throwing events and 2% towards jumping or running events.

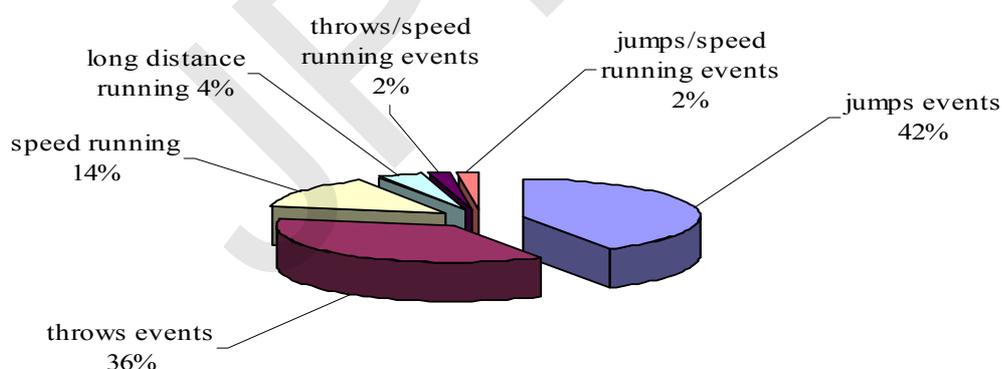


Figure 2. Distribution of Arad pupils' orientation towards groups of athletics events

Timisoara subjects have been guided mostly towards jumping events (48%), with 24% going towards throwing and 20% towards running. A smaller percentage, 8% has been guided towards long distance running events. (figure 3)

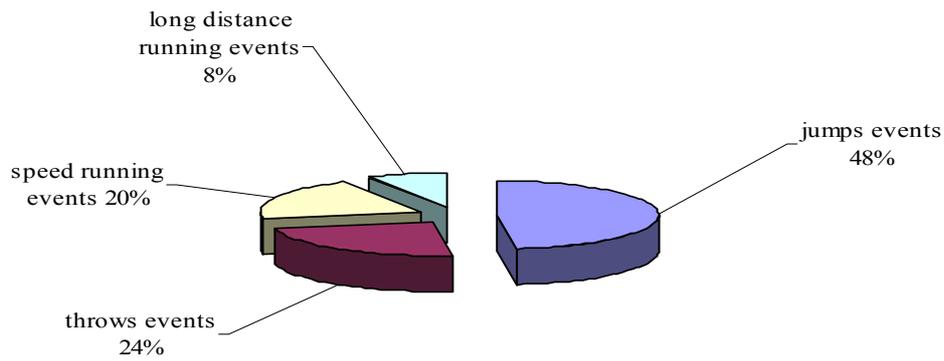


Figure 3. Distribution of Timisoara pupils' orientation towards groups of athletics events

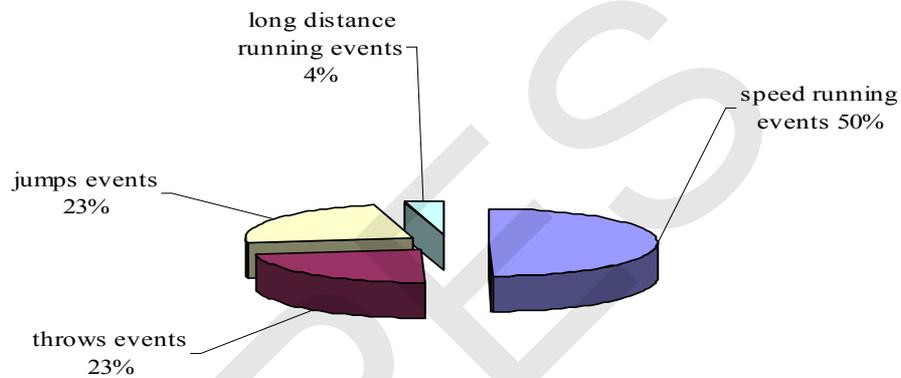


Figure 4. Distribution of Deva pupils' orientation towards groups of athletics events

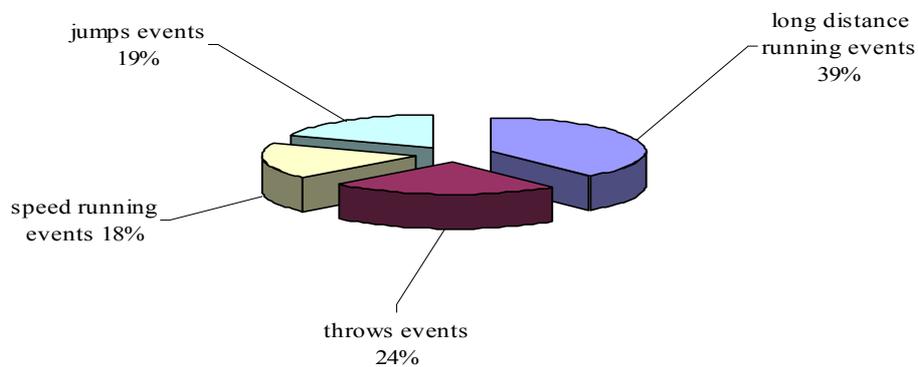


Figure 5. Distribution of Resita pupils' orientation towards groups of athletics events

Resita students showed skills for long range running, thus 39% of them were guided in that direction, while 24% went towards throwing, 18% towards jumping and another 18% towards short distance running. (figure 5)

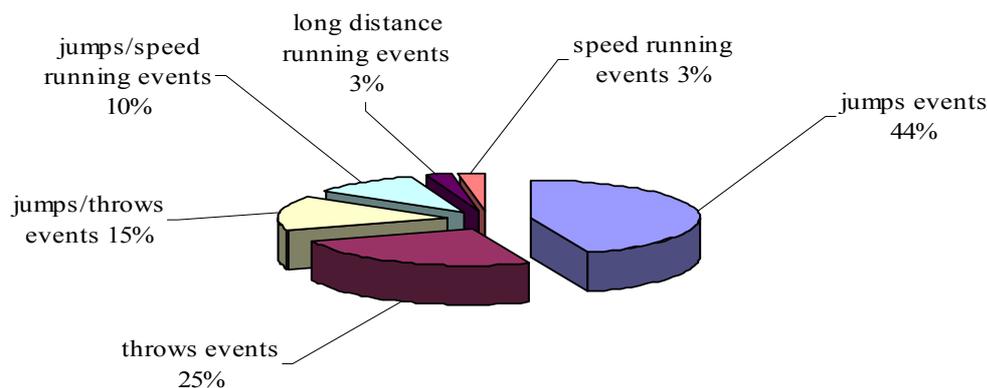


Figure 6. Distribution of Cluj Napoca pupils' orientation towards groups of athletics events

In Cluj Napoca, students were mostly (46%) guided towards jumping disciplines, 25% toward throwing and only 3% showed skills for the running disciplines. Similar to the Arad case, subjects recorded relatively good results for more than one trial have been guided initially towards two groups – 10% towards jumping and short range running and 15% towards jumping and throwing. (figure 6)

The results of the sporting guidance initiative display originality given by the specifics of the tests employed and the geographical areas from where the subjects were selected, but the principles on which this initiative was accomplished are generally applicable, the methods and norms used are transparent and easy to use.

This sporting guidance initiative is a starting point, an aid instrument for every specialist in the field, so as to extent the selection base in the field of athletics for gifted youth.

Based on the findings from the 5 counties we propose the creation of a tool for outlining children with athletics potential in the form of a “Registry of potential competition athletes” which should be accessible and continuously updated; it should function as a database for coaches.

Creation of the “Registry of potential competition athletes” is viewed as a lengthy process, involving specialists from the field of athletics which provide and continuously update data within the Registry as well as entities and organizations at the local, regional or event national levels (county offices for youth and sports DJTS, sports clubs, associations, foundations, sports NPOs, federations, etc.)

The Registry can be structured by sections containing the various athletic challenges, indicating the same way as for the sporting guidance initiative, subjects' initials, gender, class and school numbers, results to different tests and trials and the guidance proposal – so as to protect subjects' personal data.

To correctly identify every subject, the registry should contain as much contact data as possible for the specialist who introduced the data into the database (first and last name, address, phone number, email, etc.)

The Registry should not be viewed simply as a selection base, its usefulness can be extended to scientific research; field specialists can make use of existing data as well as contribute to the updating and enrichment of data.

Last but not least, this registry can become a useful tool for statistical studies – to validate various hypotheses, but in order for that to happen data volume is essential.

The initiative to promote, test and guide from a sports perspective in a scholastic environment in the 5 counties we kicked-off the process of creating the Registry for potential competition athletes, by creating the first database – a possible model in the development of this project.

## Conclusion

*“Does the current selection system for the first formative phase of athletics cover the entire array of gifts and skills necessary in order to practice the sport of athletics, for all groups of trials?”* No, the selection trials stipulated by the FRA (Romanian Athletics Federation) do not provide the selection coach the entire range of motion, psychomotility and coordination skills the subject presents, skills required for the athletics field. The current tests of the selection system outline only the development level for conditional motion skills. The current range of trials lacks the ones that should test for balance, lateral motion, space-time orientation, segment coordination, skills that enhance or restrain one's ability for certain athletic challenges, as outlined in the preliminary research.

“Are specific trials designed to assess the psychomotility, general coordination and segmentation necessary within the selection system for the first formative phase?” The answer is yes. By diversifying the range of trials for the first formative phase by introducing tests for psychomotility general coordination and segmentation we obtained a clearer outline of children’s skills, their development level contributing to a more efficient selection process.

By promoting, selection and sporting guidance in the scholastic environment for the 5 counties (473 children tested) we kicked-off the creation of a “Registry of potential competition athletes”, setting up the first database which can represent a model for the development of this project. The registry should not be seen only as a selection database for its usefulness can be extended to scientific research. The field specialists have access to all of the data of our research: children’s identification data, schools at which they study, names of their physical education teachers, test results and evaluation results. Some can use the data for selection while others can choose to continuously update the data. The registry can also be used for sociological research, due to its large data volume relating to predispositions of children between the ages of 9 to 12.

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