Journal of Physical Education and Sport ® (JPES), 18 Supplement issue 5, Art. 307, pp. 2058 - 2064, 2018
online ISSN: 2247 - 806X; p-ISSN: 2247 – 8051; ISSN - L = 2247 - 8051 © JPES

Original Article

Contributions to corroborating instruments and techniques for assessment in motor learning

MIHĂILESCU LIVIU[1], MIHĂILESCU LILIANA[2], DOBRINOIU (ION) NICOLETA[3]
[1,2]Univerity of Pitesti, ROMANIA
[3]L.P.S. Cîmpulung Muscel

Published online: November 30, 2018
(Accepted for publication November 20, 2018)
DOI:10.7752/jpes.2018.s5307

Abstract:
Sports training is an instructive educational process and in this context the work envisages two of its specific activities, learning and evaluation, conditioning the learning efficiency of motivational levers of the athlete, subject to the training process. The research aims at identifying the answer to the questions asked: what are the essential aspects that should be centered on the learning assessment, a component of the educational instructive process, largely determined by the motivation of learning?; methods, tools, techniques for assessing motor and psychic aspects can be corroborated to increase the efficiency of technical learning at the level of the first formative stage of long-term training of performance athletes? In this context, the aim of the research is to regulate the psycho-motor behavior of the athletes who go through the first stage of training, on the basis of the objective evaluation of the level of learning of the basic mechanism of the specific skills and the quantification of the motivational level of the athletes in learning. Three working hypotheses were formulated, and for their verification methods, appropriate research tools were used: the experiment, the validated and standardized questionnaire survey, the evaluation protocols, the statistical mathematical methods. The research was carried out on a group of 13 students, members of a group of beginners in athletics, in the school year 2016-2018. Analyzing and interpreting research results validates assumptions, identifies the effectiveness of assessment tools and their corroboration. The conclusions drawn are meaningful in terms of purpose and give reasoned answers to the questions formulated at the beginning of the research.
Key words: athletics, learning, evaluation, technical training, psychological training.

Introduction

At the current level of sports performance, with no technical training based on a thorough learning, the consolidation and improvement of specific skills, technical elements and procedures cannot be achieved. The lack of a rational technique, starting with the first formative stage, becomes even a limiting factor, in the long term, in the appreciation of the athlete's psychomotor qualities (Popa, C., Ilarion, A., Gevat, C., 2006, Mocanu, AM, 2010, Ion NC, 2018).

Technical training means "the totality of means which, by their specific form and content, allow the practice of a sporting branch according to the rules of the competition and make up the technique of the respective sporting branch" (Nicu A., 1993, p.258). The motor learning, the computational process that is the basis of technical learning, is multifactorial conditioned (Famose JP, 1998, Epuran M., Holdevici I., Toniza F., 2001). One of them finds induction of the motivation of learning at the level of the athlete (Haralambia A. , 2010, Mihăilescu L., Mihăilescu LE, 2011,2013, Mihăilescu L., Haralambie A., & all 2013). Sports training is an instructive educational process, and in this context two of its specific activities, learning and assessment based on the conditioning of learning efficiency by the motivational levers of the athlete, the subject of the training process, is a challenge.

The fundamental condition for the scientific direction of the training is evaluation. The main aim of the evaluation is to highlight the morphological, functional, motor and psychic changes produced in the direction of improving the states of adaptation to various types of effort (Merni F., 1991, Bologa, M., Gherghişan, D., 1994, Mihăilescu L., Şerban A., 2005).

Research questions

What are the key issues that must be centered on learning assessment, a component of the educational instructive process, largely determined by learning motivation?

Can methods, tools, techniques to assess motor and psychic aspects be combined to increase the efficiency of technical learning at the level of the first formative stage of long-term training of performance athletes?

Corresponding Author: MIHĂILESCU LIVIU, E-mail: liviumihailescu2006@yahoo.com

Purpose, assumptions, research methods

The goal of the research is to regulate the psycho-motor behavior of athletes who undergo the first stage of training, based on the objective assessment of the level of learning the basic mechanism of specific skills and the quantification of the motivational level of athletes in learning.

Research assumptions

If the technical training of beginners is to be correlated with psychological training, the full learning objective will be achieved with efficiency.

The objective evaluation of the attainment level of athletic skills provides feed-back for the methodological intervention in the learning process.

The ability to regulate and self - regulate mental states can be developed by specific methods and means in beginner training.

The research methods used to verify the level of learning of the skills specific to the athlete's technique proposed in the experiment were used in the system, while respecting the deontology of scientific research. The questionnaire survey method has been operationalized using standardized questionnaires produced by researchers Bologa, M., Gherghişan, D., (1994) and interpreted in reference to the references established by Haralambia A, (2010). Three questionnaires were used with 13 items each, on motivational factors that complied with the bifactorial concept, 7 intrinsic factors and 7 extrinsic factors (Table 1). In order to quantify and evaluate the infrastructure level of motivation and its overall structural level, each of the three variants of a given score as outlined in the following table. The quantification was calculated using the undifferentiated use of the answers obtained for content and context factors, the global motivational force - FMG = V x E and the global motivational instrumentality - IMG = V x I

Table 1. Elements of motivational factors

No	**Intrinsic motivational ideas**	**Extreme motivational ideas**
1	Content of sports activity: training, contests	Normative acts of sports: regulations
2	Chances of using and developing sports capabilities creatively	Material benefits and facilities: awards
3	Passion for practiced sport	Social climate: family, public, coach
4	The level of athletic aspiration	The driving style applied by the coach
5	Trend of personal affirmation: integration and hierarchical promotion in the team	The social prestige of practiced sport, club, coach
6	Need for performance: to be the best, to win, self-sufficiency	The sport-school relationship: the ability to be a performance athlete and a student
7	Fear of failure: misses, defeats, injuries, opponents	Material conditions: installations, equipment, material base

Table 2. Score of response variants on evaluated motivational tools

Answer options				
Score		**3**	**2**	**1**
Motivational tools	valence	Very important	Of medium importance	Unimportant
	expectancy	Meets total expectations	Sometimes it meets expectations	It does not meet expectations at all
	instrumentality	It totally depends on you	It depends on you and others	It depends totally on others

The method of pedagogical observation has been operationalized by building observer protocols, compiled by qualified observers and not involved in the training of athletes, the analysis and interpretation being related to the proposed scoring scale: 3 points were awarded in the case of execution is correct, 2 points to an execution with small mistakes and 0 points for incorrect execution. The pedagogic experimental method of the longitudinal type, which took place in the school year 2016-2017, at CâmpulungMuscel Sports High School, in a group of athletics - beginners, 13 athletes, 9 of them boys and 4 girls.

The content of the research

Driving learning has taken into account the learning units established through the content of the annual didactic design: running downhill speed, running the fences, jumping 1 1½ steps in the air and jumping with dorsal tipping. For the teaching of the above mentioned techniques the model of the programmed branch training, elaborated by Mihailescu, L., and Mihãilescu, N., (2002) was used. Exercises, games, appraisals and contests were the main means used in learning.

The components of the psychological training used in the pedagogical experiment were as follows: external perceptual sensory control; body awareness; controlling the feeling of fatigue; control of attention; setting goals; motivation control; mental anticipation / programming of actions; control of emotions; control of anxiety; control of negative thinking; developing positive thinking; developing self-confidence. The means used to activate the motivational levers in learning were: discussion, suggestion, attitude training, intuitive and verbal means, mental training, autosuggestion, accounts of their own execution.

All aspects regarding the content of the didactic design have been operationalized in the didactic strategy of the teacher who worked directly with the respective group, Dobrinoiu (Ion) Nicoleta, first grade teacher.

Table 3. Observation protocol for acquiring the basic mechanism of the fence run

No	Athlete	Start and launch from start (point)	Fence crossing (point)	Running between fences (point)	Run after the last fence and arrival (point)	Total points
1	B.A.	2	2	0	2	6
2	E. A.	3	3	3	3	12
3	R.G.	2	2	2	2	8
4	A.M.	3	3	3	3	12
5	B.S.	3	3	3	3	12
6	B.C.	3	3	3	3	12
7	B.L.	3	2	2	2	9
8	G.N.	2	2	2	2	8
9	M.M.	3	3	3	3	12
10	D.Ş.	3	2	2	2	9
11	O.D.	3	3	3	3	12
12	O.N.	3	3	3	3	12
13	O.G.	3	3	3	3	12

Table 4. Observation protocol for acquiring the basic mechanism of jump in height with dorsal tipping

No	Athlete	Elk (point)	Beating (point)	Flight (point)	Landing (point)	Total points
1	B.A.	2	2	2	2	8
2	E. A.	3	2	2	3	10
3	R.G.	2	2	2	2	8
4	A.M.	3	3	3	3	12
5	B.S.	3	3	3	3	12
6	B.C.	3	3	3	3	12
7	B.L.	3	3	3	3	12
8	G.N.	2	2	2	2	8
9	M.M.	3	3	3	3	12
10	D.Ş.	3	3	3	3	12
11	O.D.	3	3	3	3	12
12	O.N.	3	3	3	3	12
13	O.G.	3	3	3	3	12

At the fence run, 61.5% of the subjects correctly mastered the basic mechanism, 38.5% partially correct. With regard to the 1½½-foot leaping technique in the air, 84.6% of the beginner athletes correctly mastered the basic mechanism, 15.4% partially correct, none incorrectly.

In the high jump with dorsal tipping, 69.2% of the athletes correctly mastered the basic mechanism, while 21.8% were partially correct.

After analyzing and processing the data recorded by subjects at the lower start run, it was found that 92.3% of the subjects correctly mastered the basic mechanism, 17.7% partially correct and 0% incorrect.

There have been no technical deprivation athletes who have completely failed the basic mechanism of the technique. Athletes are going to consolidate their core mechanism in the next semesters, resuming the individualized learning process.

In order to evaluate the motivational level in learning, the three questionnaires were used and in Tables 5-10 there are recorded the answers of the subjects of the research on motivational factors, the score given for the variants of response and the weight of the answers on the three variants that I presented suggestively in the graphs next.

Table 5. Values of intrinsic indices the valence of the motivation of the beginner athletes

No. item	No. Thread /response variants 3	2	1	No. Thread /response variants 3	2	1
1	11	2	0	33	4	0
2	9	2	2	27	4	2
3	10	2	1	30	4	1
4	8	3	2	24	6	2
5	6	5	2	18	10	2
6	10	2	1	30	4	1
7	2	5	6	6	10	6

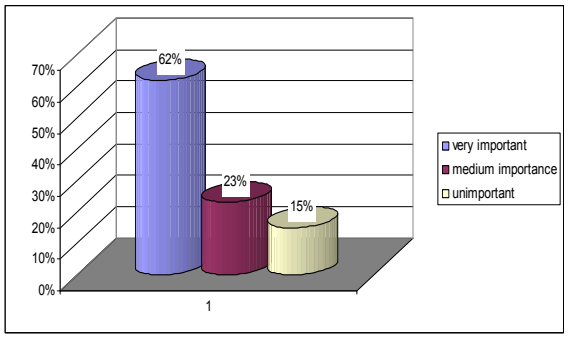

Fig. 1. The share of intrinsic indices valence motivation

Table 6. Values of extrinsic indices the valence of the motivation of the beginner athlete

No. item	No. Thread /response variants 3	2	1	No. Thread /response variants 3	2	1
8	8	4	1	24	8	1
9	7	5	1	21	10	1
10	5	4	4	15	8	4
11	8	3	2	24	6	2
12	5	4	4	15	8	4
13	10	3	0	30	6	0

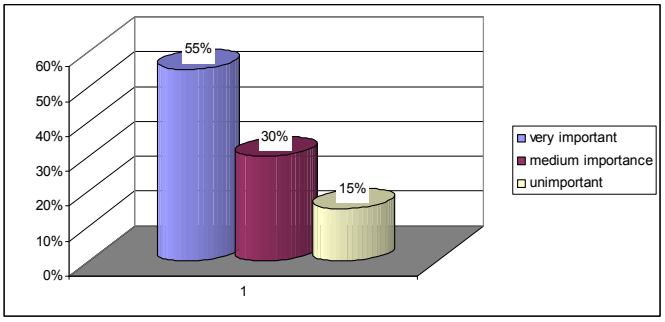

Fig. 2. Share of extrinsic indices ofvalence motivation

Table 7. Values of intrinsic indices of the expectation of motivation of beginner athletes

No. item	No. Thread / response variants 3	2	1	No. Thread / response variants 3	2	1
1	11	2	0	33	4	0
2	10	3	0	30	6	0
3	11	2	0	33	4	0
4	9	2	2	27	4	2
5	7	5	1	21	10	1
6	9	3	1	27	6	1
7	8	3	2	24	6	2

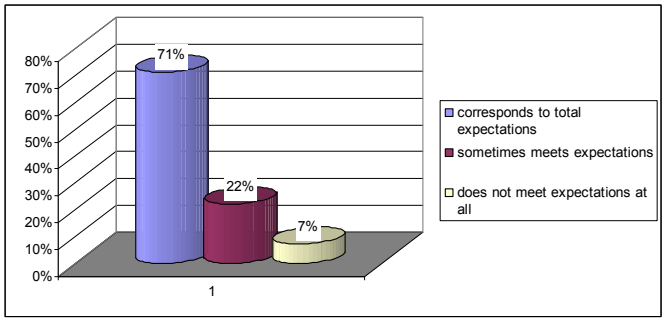

Fig. 3. The share of intrinsic indices of the expectation of motivation

Table 8. Values of extrinsic indices of the expectation of motivation

No. item	No. Thread /response variants 3	2	1	No. Thread /response variants 3	2	1
8	7	5	1	21	10	1
9	7	4	2	21	8	2
10	10	3	0	30	6	0
11	8	5	0	24	10	0
12	7	6	0	21	12	0
13	10	3	0	30	6	0

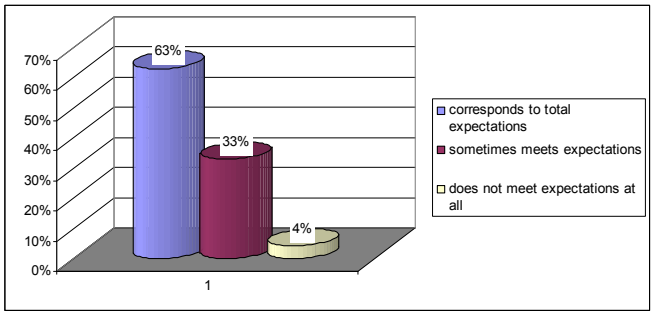

Fig. 4. Share of extrinsic indices of the expectation of motivation

Tabelul 9. The values of intrinsic indices of the instrumentality of motivation

No. item	No. Thread /response variants 3	2	1	No. Thread /response variants 3	2	1
1	3	7	3	9	14	3
2	4	8	1	12	16	1
3	11	2	0	33	4	0
4	1	4	8	3	8	8
5	4	8	1	12	16	1
6	10	3	0	30	6	0
7	11	2	0	33	4	0

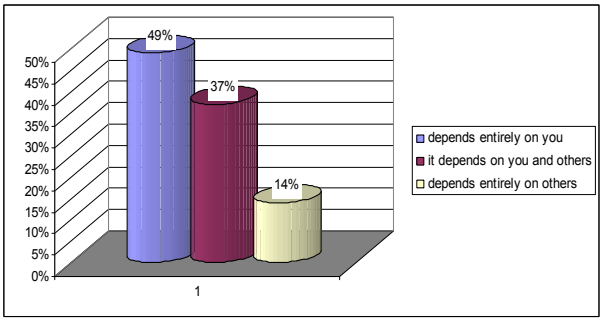

Fig. 5. Share of intrinsic indices of the instrumentality of motivation

Table 10. Values of extrinsic indices of the instrumentality of motivation

No. item	No. Thread /response variants 3	2	1	No. Thread /response variants 3	2	1
8	0	3	10	0	6	10
9	1	4	8	3	8	8
10	2	5	6	6	10	6
11	0	4	9	0	8	9
12	13	0	0	39	0	0
13	0	3	10	0	6	10

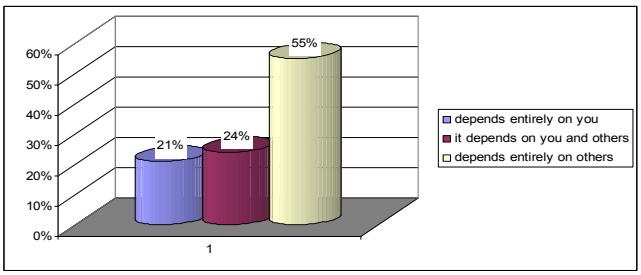

Fig. 6. The share of extrinsic indices of the instrumentality of motivation

In order to determine the motivational force at the level of the athletes in the experimental group we analyzed, by comparison, the results recorded in the motivational questionnaires with the results presented by Haralambie, I., A., (2010), in the Doctoral Thesis (pages 112-114) juniors III, finalists at the national championship, which we considered as reference for our research. The following table links the weighting of motivational factors, intuitive and extrinsic, to the motivational structure for the two categories of subjects.

Table 11. The weight of the motivational factors - the experimental group vs. the reference

	Results experiment group						**Reference model (results from Haralambie A, 2010)**					
	Intrinseci factors			*Extrinseci factors*			*Intrinseci factors*			*Extrinseci factors*		
Reponse variants	1	2	3	1	2	3	1	2	3	1	2	3
The sense of motivation												
Weight	62%	23%	15%	55%	30%	15%	94%	4,8%	0,6%	71,1%	25,2%	3,6%
The expectation of motivation												
Weight	71%	22%	7%	63%	33%	4%	48%	32,7%	19,3%	43,3%	24,6%	32%
Instrumentality of motivation												
Weight	49%	37%	14%	21%	24%	55%	31,6%	32%	36,4%	6,6%	26%	67%

According to the data in Table 5 and Figure 1, 62% of the subjects chose the first response, 23% on the second variant and 15% the third response. This means that for them the importance of the intrinsic factors of the motivation valency prevails. Regarding the weight of extrinsic factors of the motivation valence (material advantages, social climate, material conditions, etc.), the subjects of the research opted for 55% for the first variant, 30% chose the second answer and 15% the third variant. We compared the results of our research with the references we reported, the values presented by Haralambie A (2010) for athletes of the same age, and we found that the subjects of our research are below the reference to the percentages for the first variant of response in both types of motivation 32% for intrinsic factors and 23% for extrinsic factors, which means that the level of psychological training of the experimental group should be improved by athletes becoming aware of the importance of their involvement in the training process.

Concerning the expectation of motivation, the results of which are presented in Tables 7, 8 and illustrated in charts 3, 4, we find that 71% of the athletes opted for the first answer, 22% chose the second variant and 7% agree with the third variant. This illustrates that the vast majority of subjects consider that the difficulty of the proposed objectives, the possibility of affirmation, the content of the sport activity are in full agreement with their expectations. For extrinsic factors of expectation, we find that 63% of the subjects opted for the first answer, 33% for the second variant, considering that extrinsic factors sometimes meet expectations, and 4% of them consider that material advantages, facilities, material conditions would no longer meet expectations.

The results obtained by Haralambie, I., A., (2010), regarding the intrinsic indices of the expectation of motivation, were the following: 48% chose the first answer, 32.7% the second variant and 19.3% the last answer. The share of extrinsic factors of the expectation of motivation was the following: 43.3% opted for the first variant, 24.6% for the second variant and 32.1% for the last variant. By comparing the results, it can be seen that in the first situation, for intrinsic indices, the choice of the first response variant is 23% higher and 10% and 12% lower for the second and third response variations, respectively. For extrinsic indexes, the choice of the first two response variants is 20% and 11% higher in the first case, and 28% lower for the third response.

Tables 9, 10 present the results for evaluating the intrinsic indices of motivation instrumentality. From Chart 5, 49% opted for the first response, which means that they realize that their active and conscious participation in training is of real use, 37% chose the second option (it depends on you and others) and only 14% of the third response. The data on the evaluation of the extrinsic indexes of motivation instrumentation, presented in Table 10 and illustrated in Chart 6, highlight that 55% of the beginner athletes opted for the third response, 24% for the second response and 21% for the first version. This demonstrates that the research subjects claim that the material advantages, norms of sports activity, the driving style adopted by the coach, the material conditions offered in the performance of sport performance depend to the greatest extent on others.

By comparing the results with the proposed referentials (Table 11), it can be observed that in the case of the intrinsic indices of the motivation instrumentation, the data obtained are completely different, because in the first situation the majority of the subjects chose the first variant of the answer and in the second situation have opted for the third option. The percentage difference is as follows: 18% and 5% respectively chose the first variant and the second variant respectively, and 24% fewer opted for the third variant. For extrinsic indexes, the largest choice of choice was the third response variant in both situations, then the second and first variants, with some percentage differences: 12% fewer subjects who opted for the third response, fewer, but 2% beginner athletes who chose the second variant and 15% more those who opted for the first variant of the answer.

Conclusions

The content of technical training and the motivation of motor learning is largely determined by the content, methods and techniques used in the psychological training of beginner athletes. The acquisition / formation of basic psychiatric deprivation at this formative stage helps to increase the motivation of the athletes to prepare them, determining the active and conscious participation in the technical training. The correlation of the means and methods of psychological training with those of technical training determines the achievement of the goal of full learning: everyone learns what has to learn. The correlation of the means and methods of assessing psychological training with those of technical training, the results of athletes in the respective assessments provide the premises for an effective training, in which the athlete is motivated to entertain the achievement of educational instructive objectives. The results of the research highlight the motivational level of the athletes, following the didactic strategy used in the experiment, comparable to that of the athletes in the first formative stage on an annual basis. This has proven to be a factor in learning athletic skills specific to all athletes in the experiment. The ratings obtained in the observation protocols highlight this. An objective assessment of the attainment level of athletic skills can be made and it provides the necessary feed - in for the methodological intervention in the learning process.

References

Bologa, M., Gherghişan, D., 1994, *Possibilities to quantify motivation in sports activity*. Published at the National Scientific Symposium "Preparation of High Performance Athletes", the International Scientific Conference of the Council of Sports Science in Romania

Epuran, M., Holdevici, I., Tonitza, F., 2001, *Psychology of Performance Sport - Theory and Practice.* FEST Publishing House, Bucharest

Famose J.P., 1998, *L'acquisition of mobility motices*, in Learning, CCPS Bucharest Publishing House

Haralambie A.I., 2010, *Opportunities to optimize the motivational level of performance athletes,* Doctoral thesis, University of Pitesti.

Ion N.C., 2018, *Corroboration of instruments and techniques for evaluation of technical and psychological training in athletics - beginners*, dissertation, University of Pitesti

Merni, F., 1991, *Evaluation of Sports Techniques* in Performance Sport no. 315, 315, MTS Publishing House, CCPS., Bucharest

Mihăilescu L., Mihăilescu N., 2002, *Programming in Athletics*, University of Piteşti Publishing House

Mihăilescu, L., Şerban, A., 2005, *Experiences regarding the Quantification of Motivation in Performance Sport*, in Sport Ştiința Magazine, no. 45, Bucharest.

Mihailescu L., Mihailescu L, E., 2011, *Sportive Performance Optimization in Track & Field Events by the Operationalization of Psychic Training*, IPCSM, Hong Kong, pp. 126-129

Mihăilescu L., Mihăilescu L., E, 2013, *The operatinalization of the mental preparation for sports performance optimization in track & field*, Procedia - Social and Behavioral, Volume 84, p.1036-1040,

Mihăilescu L., Cucui A., 2013*, Contributions to the identification of personality traits in athletes,* Social and Behavioral Sciences, Volume 127, 22 April 2014, p. 302-306

Mihailescu L., Haralambie A., Mihailescu L., Mihailescu N., 2013, *The quantification of the motivational level of performance athletes*, Procedura - Social and Behavioral, Volume 84, p.1284-1249

Mocanu, A.M., 2010, *Early Teaching Techniques*, Doctoral Thesis, University of Pitesti

Nicu, A., et al. 1993, *Modern Sports Training*. Editis Publishing House, Bucharest.

Popa, C., Ilarion, A., Gevat, C., 2006, *Psychological training of athletes in training and competition*, in the Journal of Physical and Sport Culture, vol. I, Fascicle I of "Tibicus" University Physical Education and Sport Timisoara, p.56-61