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Study on the quantification of the motivational level of high performance rowers (Note II)

Studiu privind cuantificarea nivelului motivaţional al canotorilor de performanţă (Nota II)

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Abstract

Background. We started from the premise that motivation is a regulatory incentive for athletes, which dictates the choices made by each individual athlete to achieve sports performance.

Aims. The research was initiated with the aim of identifying the rowers' motivational performance. In this regard, we aimed to quantify the overall motivation and the three components of motivation: valence, expectancy and instrumentality.

Methods. To fulfill this goal, we used a questionnaire-based survey and the data obtained were processed using the statistical-mathematical method. The infrastructural level of motivation was calculated by determining the size of each dimension of motivation factors, based on which overall motivational force (FMG) and motivation instrumentality (IM) were calculated. Quantification was performed using the responses obtained for the content and context factors according to the Dunnett formula, 1972.

The features are based on the results of the questionnaire survey, rated on a motivational assessment scale with three parameters: high, medium, low, based on the scores assigned to each choice.

Results. The value recorded for FMG (6.65) indicates a medium level of the motivational structure among high performance rower students.

The relatively low result of instrumentality (5.55) is due to the values of the structural elements of motivation, valence and instrumentality, which shows that intervention is required by a specialist (psychologist) in training the rowers. Also, the direct intervention of coaches in collaboration with psychologists can improve performance by optimizing the rowers' psychological training.

Conclusions. The knowledge of the motivational level of athletes generates motivational strategies to optimize psychological training and maximize sports performance.

Key words: rowing, motivation, performance.

Rezumat

Premize. În abordarea problematicii circumscrisă temei am plecat de la premiza că motivaţia îndeplineşte o funcţie reglatoare în conduita sportivului, aceasta fiind procesul ce guvernează alegerile făcute de fiecare sportiv în parte pentru realizarea performanţei sportive.

Obiective. Cercetarea a fost iniţiată cu scopul de a identifica nivelul motivaţional al canotorilor de performanţă. În acest sens, a fost stabilit ca obiectiv cuantificarea motivaţiei globale şi a celor trei componente ale structurii motivaţiei: valenţa, expectanţa şi instrumentalitatea.

Metode. În vederea îndeplinirii obiectivului propus am utilizat metoda anchetei pe bază de chestionar, iar prelucrarea datelor obţinute s-a realizat prin metoda statistico-matematică. Nivelul infrastructural al motivaţiei a fost calculat prin determinarea mărimii fiecărei dimensiuni a factorilor motivaţiei, pe baza cărora s-a calculat forţa motivaţională globală (FMG) şi instrumentalitatea motivaţiei (IM). Cuantificarea s-a realizat prin utilizarea răspunsurilor obţinute pentru factorii de conţinut şi de context, în conformitate cu formula Dunnett, 1972.

Caracteristicile se pun în evidenţă pe baza rezultatelelor anchetei de tip chestionar, apreciate pe o scală de evaluare motivaţională cu trei parametri: mare, medie, mică, pe baza scorurilor atribuite fiecărei variante de răspuns.

Rezultate. Valoarea înregistrată pentru FMG (6,65) indică un nivel mediu al structurii motivaţionale în rândul studenţilor canotori de performanţă.

Rezultatul relativ scăzut al instrumentalităţii (5.55) se datorează valorilor înregistrate pentru elementele structurale ale motivaţiei, valenţa şi instumentalitate, ceea ce denotă faptul că este necesară intervenţia de specialitate (psiholog) în pregătirea sportivă a canotorilor. De asemenea, antrenorii prin intervenţie directă şi în strânsă legătură cu psihologul pot îmbunătăţi performanţele sportive optimizând pregătirea psihologică a canotorilor.

Concluzii. Cunoaşterea nivelului motivaţional al sportivilor conduce la dirijarea pregătirii acestora din perspectiva pregătirii psihologice.

Determinarea nivelului motivaţional al sportivilor generează strategii motivaţionale de acţionare pentru optimizarea pregătirii psihologice şi maximizarea performanţei sportive.

Cuvinte cheie: canotaj, motivaţie, performanţă.

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Introduction

Rowing is a prominent discipline of modern high performance sport, which has won many medals in sports tournaments worldwide.

The universality of sport, the altitude and instability of performance, as well as their continuous movement towards biological and psychological limits still unknown to man, invite us to reflection and analysis. Performance does not come from a cluster of facts and events, but is a product of the effects of the concerted action of objective and subjective factors.

Athletic performance is multi-determined and it is very difficult to establish which factor has the largest share when its level is at the upper limit of the individual's capacity (motor, functional, physical, etc.). It is clear that performance sport is about competing with space, time, gravity, nature, with others and/or oneself. This activity is part of the sphere of activities that manifest at the limit of the physical and mental possibilities of the individual.

Motivation is the result, the consequence of the interaction between the individual, the task to accomplish and organizational environment. It is „the extent to which a persistent effort is directed to achieve a goal" (Preda, 2006). Motivation is „internally exposed external causality" (Golu, 2005). Popescu (2009) considers that „subjective motivation is the premise for the formation of attitudes, which is based on needs that cause the individual to show a certain behavior".

From personal experience, we can say that motivation is the basic condition for sport and a lever for the production of performance. Motivation is the impulse that a person needs to choose to practice a particular sport and the aspiration to performance. In accordance with the mentioned above, a series of studies regarding the detection of motivation among young athletes, the identification of the dominant reasons for the practice of sport depending on the performance level of athletes, the detection of the motivational task and its intensity, as well as the identification of motivation to practice physical activity among adolescents have been conducted (Amici et. al., 2009; Coelho & Vasconcelos-Raposo, 2006; Rose et al., 2006; Pihu et al., 2006; Liang & Chun, 2004; Welde & Svebak 2008).

Hellriegel states that motivation must be seen as a „function of the relationship between effort and the perceived level of performance - on the one hand - and the expectation of reward (its size) - on the other hand" (Hellriegel, 1992, quoted by Mihailescu et al., 2011).

Motivation is the process governing the choices made by each individual athlete to achieve sports performance and fulfills a regulatory function in the athlete's conduct, it is determined by a consciously proposed aim and represents „a state that energizes behavior and gives it direction" (Atkinson & Hilgard, 2005). In the context of the above mentioned, the research was initiated in order to identify the motivational level of high performance rowers in terms of the three motivational factors: valence, expectancy and instrumentality, considered by Mamali (1981) to form „the infrastructural level of motivation".

In professional sports, motivation plays a decisive role because it underlies the continuity of sports training at a level as close as possible to optimal. This should be seen both from the point of view of the athlete, of the professional entourage (coaches, doctors, psychologists, managers, etc.) and of the social entourage (family, friends, etc.).

The approach from the perspective of the individual maintains that the motivating force is inherent to the individual and depends on personal characteristics such as needs, impulses, instincts, personality traits. In the situational perspective (individual + environment), behavior also depends on factors exterior to the individual, such as the working environment, nature of work, management style of superiors, etc. (Cucui & Cucui, 2014).

Human performance, including sports performance, can be explained as a multiplicative factor of motivation and capabilities/skills (Epuran et al., 2008; Gherghişan Bologa & 1994; Mihailescu & Serban, 2005), P = f (MXA). The sources of motivation are internal and external: internal motivation results from maintaining in an active state the needs and interests that evolve and restructure along the path of building the performance capacity; external motivation generated by the environment is felt to a lesser extent by the high competitive value athlete (Mihailescu & Serban, 2005; Nepopaloov & Aleksandridi, 2004; Popa et al., 2006).

Athletic performance can be influenced by the intensity of motivation, as it is known that optimally motivated athletes generally tend to achieve better performance. So, motivation is one of the factors contributing to individual athletic performance; along with motivation, performance is strongly influenced by skills, abilities, biomotor qualities, by the understanding of objectives and by the opportunity to achieve outstanding results (Cucui, 2014).

Hypothesis

We believe that the objective determination of the motivational level generates operational objectives and individual mental preparation strategies, for optimizing the sports performance of rowers.

Material and methods

We mention that in accordance with the Declaration of Helsinki, Amsterdam Protocol and Directive 86/609 / EEC, the approval of the Ethics Commission of the Department of Physical Education and Sports of the „Valahia" University of Targoviste for research on humans was obtained, and also, the consent to personal participation in the research.

Research protocol

a) *Period and place of the research*

The research was conducted in March 2014 at the „Valahia" University of Targoviste. During this period, a set of questionnaires was applied, and the obtained data were collected and processed.

b) *Subjects and groups*

The sample comprised 25 subjects (13 F and 12 M), aged between 19 and 23 years. The subjects were high performance rowers, members of the national team, with medals in national and international sports competitions.

c) *Tests applied*

Depending on motivational factors in Tables I and II, the content of the set of questionnaires was elaborated,

including the three motivational dimensions (valence, expectancy and instrumentality of motivation). The questionnaires were developed and validated by Mihailescu & Serban, 2006 and Haralambie & Mihailescu, 2010.

- Motivational indicators were calculated using the following experimentally validated formulas (Mihailescu & Serban, 2006; Haralambie & Mihailescu, 2010):

- overall motivational force: FMG = V x E; V = valence; E = expectancy.

- motivational instrumentality: IM = V x I; V = valence; I = instrumentality.

d) *Statistical processing*

Processing of data from the questionnaire-based survey was performed using Microsoft Excel.

Results

The infrastructural level of motivation was calculated by determining the size of each dimension of motivation factors, based on which we calculated overall motivational force (FMG) and motivational instrumentality (IM). Quantification was achieved by the indiscriminate use of responses obtained for the intrinsic and extrinsic factors (Tables I, II), according to the Dunnett formula, 1972, validated experimentally by Mihailescu & Serban, 2006; Haralambie & Mihailescu, 2010). The results were assessed on a motivational scale (Fig. 1) with three parameters: large, medium, small, developed based on the scores given to the response options and on the FMG calculation formula (Table III).

The research allowed us to determine/identify the motivational level by quantifying the motivational factor dimension values. Following the centralization of research data and their statistical-mathematical processing, FMG and IM were identified.

Table I

Intrinsic motivational factors.

No.	Motivational items
1.	Content of sports activity: training, competitions, training camps, recovery
2.	Opportunities for the creative use and development of sports abilities
3.	Passion for the sport practiced
4.	Level of sports aspiration: promotion to higher categories, team selections
5.	Self-assertion tendency: integration and hierarchical promotion in the team
6.	Performance need: to be the best, to win, to surpass oneself
7.	Fear of failure, defeat, injuries, opponents, need to feel safe

Table II

Extrinsic motivational factors.

No.	Motivational items
1.	Sports activity norms: laws, statutes, regulations
2.	Material advantages and facilities: bonuses, rewards, housing, travels
3.	Social environment: family, club, public, coaches, media, radio and television
4.	Social prestige of the athlete, practiced sport, club, coach
5.	Management style applied: by the coach, club, administration
6.	Sport-school relationship: the possibility of being an athlete and a student
7.	Material conditions: facilities, equipment, program - schedule

Table III

Score of response options.

		Possible responses		
	Score	3	2	1
Motivational tools	Valence	very important	moderately important	unimportant
	Expectancy	completely corresponds to expectations	sometimes corresponds to expectations	does not correspond at all to expectations
	Instrumentality	totally depends on you	depends on you and others	totally depends on others

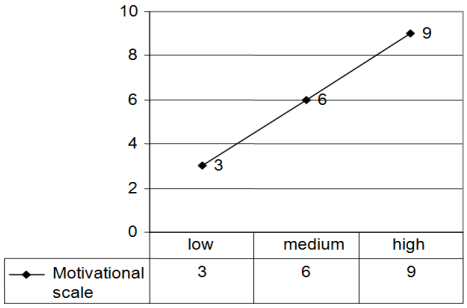

Fig. 1 – Motivational scale.

By processing the questionnaires, the values of the intrinsic and extrinsic indices of the motivation structural elements were determined among high performance rowers; the values of motivational indices are shown in Tables IV-VI (Haralambie, 2010).

Table IV

Values of intrinsic and extrinsic indices of motivational valence.

No. item	No. subjects			No. points			Average answers
	3	2	1	3	2	1	
1	25	-	-	75	-	-	3
2	24	1	-	72	2	-	2.96
3	25	-	-	75	-	-	3
4	25	-	-	75	-	-	3
5	25	-	-	75	-	-	3
6	25	-	-	75	-	-	3
7	16	8	1	48	16	1	2.60
8	17	6	2	51	12	2	2.60
9	23	2	-	69	4	-	2.92
10	10	11	4	30	22	-	2.08
11	21	4	-	63	12	-	3
12	15	7	3	45	21	3	2.76
13	18	6	1	54	12	1	2.68
14	23	2	-	69	4	-	2.92

Table V

Values of intrinsic and extrinsic indices of motivational expectancy.

No. item	No. subjects			No. points			Average answers
	3	2	1	3	2	1	
1	17	8	-	51	16	-	2.68
2	21	4	-	63	8	-	2.84
3	19	5	1	57	10	1	2.72
4	15	7	3	45	14	3	2.48
5	18	5	3	54	10	3	2.68
6	21	4	-	63	8	-	2.84
7	11	13	1	33	26	1	2.40
8	14	10	1	42	20	1	2.52
9	1	9	15	3	18	15	1.44
10	11	12	2	33	24	2	2.36
11	7	14	4	21	28	4	2.12
12	5	18	2	15	36	2	2.12
13	8	16	1	24	32	1	2.28
14	2	11	12	6	22	12	1.60

Table VI
Values of intrinsic and extrinsic indices of motivational instrumentality.

No. item	No. subjects			No. points			Average answers
	3	2	1	3	2	1	
1	1	19	5	3	38	5	1.84
2	3	18	4	9	36	4	1.96
3	10	12	3	30	24	3	2.28
4	12	12	1	36	24	1	2.44
5	7	5	13	21	10	13	1.76
6	16	6	3	48	12	3	2.52
7	17	8	-	51	16	-	2.68
8	-	2	23	-	4	23	1.24
9	-	4	21	-	8	21	1.48
10	5	12	8	15	16	15	1.84
11	3	21	1	9	42	1	2.08
12	2	12	11	6	24	11	1.64
13	14	11	-	42	22	-	2.56
14	-	7	18	-	14	18	1.28

Discussions

After centralizing the data of the questionnaires distributed among high performance rowers, we calculated the infrastructural level of motivation by determining the size of each motivational factor, then we quantified FMG and IM:

FMG = V x E = 6.65;

IM = V x I = 5.55.

The value recorded for FMG indicates a medium level of motivation among high performance rowers.

The analysis and interpretation of the research results show that the investigated subjects attach a particular importance to intrinsic motivational factors such as the content of sports activity, the passion for the practiced sport, self-assertion, the need for performance. It can be seen that the expressed desire to achieve the final goals is consistent with maximizing athletic performance and obtaining social prestige through the sports activity carried out. The results obtained for items 9, 12, 14 evidence that the athletes are aware of the importance of material conditions and of the management style adopted by the coach to optimize sports training, as well as of material benefits obtained from sports performance.

Regarding the subjects' opinion on the likelihood of fulfilling their needs and wishes through the activity practiced, the athletes believe that they are being given the opportunity to use and develop their capacities as expected. The values obtained, 2.68 and 2.84 for items 5, 6, show that the rowers think that through the work carried out they can surpass themselves, they can satisfy their need to be the best and they can assert themselves.

The value (2.52) identified for item 6 of motivational instrumentality indicates that athletes are aware that by achieving the proposed objectives during their sports activity, they can assert themselves on a personal level.

The relatively low result of instrumentality (5.55) is due to the values of the structural elements of motivation, valence and instrumentality, which shows that intervention is required by a specialist (psychologist) in training the rowers. Also, the direct intervention of coaches in collaboration with psychologists can improve performance by optimizing the rowers' psychological training.

Conclusions

1. From the analysis regarding the quantification of FMG, it can be seen that its determination allows us to identify the motivational level of athletes during sports activity.

2. The value recorded for FMG (6.65) indicates a medium level of motivation among high performance rowers, which could be improved by the motivational support provided by coaches and psychologists. The rowers' sports training is supported by their passion for the practiced sport, the desire to win, the need for personal assertion, and by the obtaining of advantages and facilities through the practice of high performance rowing. The analysis highlights that intrinsic motivation leaves its mark on the training of athletes, which also shows the need to maintain and develop intrinsic factors as well as to optimize extrinsic factors.

3. The result for motivational instrumentality (IM=5.55) shows a motivational valence and a motivational instrumentality around a medium level of motivation, which gives the probability of achieving or not the ultimate goals of sports activity.

4. The results regarding the motivational factors reflect the need for the intervention of a specialist in optimizing the mental preparation of rowers to support sports training and the achievement of first level goals, which generates the improvement of sports performance.

5. The knowledge of the motivational level of athletes leads to their training with a view to psychological preparation.

6. The determination of the motivational level of athletes generates motivational strategies to optimize psychological training and maximize sports performance.

Conflicts of interests

Nothing to declare.

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References

Amici S, De Pero R, Piacentini MF, Capranica L. Motivation for sport in young Italian competitive athletes. Vol. 14th annual Congress of the European College Of Sport Science, 2009, June 24-27, Oslo, Norway, 2009,209-210.

Atkinson R, Hilgard E. Introducere în psihologie. Ed. Tehnică, Bucureşti, 2005.

Bologa M, Gherghişan D. Posibilităţi de cuantificare a motivaţiei în activitatea sportivă. Vol. Simpozionul Ştiinţific Naţional „Pregătirea sportivilor de înaltă performanţă" Bucureşti, Conferinţa Consiliului Ştiinţei Sportului, 1994,119-125.

Coelho E, Vasconcelos-Raposo J. Motivational orientations and intensity of negativity and self-confidence in elite portuguese athletes of individual sports. Vol. 13-th Annual Congress of the European College of Sport Science. Estoril-Portugal, 2006, 428.

Cucui IA, Cucui GG. Motivation and its implications in sports performance (Note I). Palestrica of the Third Millennium - Civilization and Sport, 2014;15(1):67-71.

Cucui IA. Motivaţia-componentă esenţială a pregătirii psihice în antrenamentul sportiv la atletism. Ed. Bibliotheca, Târgovişte, 2014.

Epuran M, Holdevici I, Toniţa F. Psihologia sportului de performanţă: Teorie şi practică. Ed. FEST, Bucureşti, 2008.

Golu M. Bazele psihologiei generale. Ed. Universitară, Bucureşti, 2005, 572.

Haralambie A, Mihăilescu L. Research concerning the motivation's quantification for performance athletes. Citius Altius Fortius, J Phys Ed Sp, 2010;27(2):79-85.

Haralambie IA. Posibilităţi de optimizare a nivelului motivaţional al atleţilor de performanţă. Teză de doctorat. Universitatea din Piteşti, 2010.

Liang Mei Yang, Chun Ming Chen. The differences of motivation and attitude toward exercise among different levels of athletic participation. Pre-Olympic Congress. Vol. Sport science through the ages. Thessaloniki. Hellas, 2004, 142-146.

Mamali C. Balanţă motivaţională şi coevoluţie. Ed. Ştinţifică şi Enciclopedică, Bucureşti, 1981.

Mihăilescu L, Haralambie A, Mihăilescu N, Mihăilescu L. Determining the motivations feature formative stages athletics. Gymnasium: J Phys Ed & Sp, 2011;12(1):142-147.

Mihăilescu L, Şerban A. Experiences concerning the motivation quantification in performance sport. Sport science magazine, 2005;45:88-92.

Nepopaloov V, Aleksandridi D. Motivational sphere of personality of athletes practicing. Pre-Olimpic Congress, Vol II, Sport science through the ages, Thessaloniki. Hellas. Aristotle University Campus, 2004, 8.

Pihu M, Hein V, Koka A. The processes by which perceived teacher behavior in physical education promotes leisure time physical activity behavior a trans-contextual model. Vol. 11-th annual Congress of the European College of Sport Science. Lausanne, 2006,160.

Popa C, Ilarion A, Gevat C. Pregătirea psihologică a atleţilor în antrenament şi concurs. Cultură Fizică şi Sportivă. 2006; 1:383-390.

Popescu G. Psihologia creativităţii. Ed. Fundaţiei România de Mâine. Bucureşti, 2009.

Preda M. Comportament organizaţional. Teorii, exerciţii şi studii de caz. Ed. Polirom. Iaşi, 2006,57.

Rose E, Stewart A, Cox K, Puddey I. The relationship between athletic self-perceptions, exercise motivation, autonomy, social connectedness, and physical activity in older adults. Vol. 11-th Annual Congress of the European College OF Sport Science. Lausanne, 2006,30.

Welde B, Svebak S. The significance of motivational styles and resistance training in elite junior cross-country ski performance. Vol.13th Annual Congress of the European College of Sport Science. Estoril-Portugal, 2008,664.