

CONTRIBUTION TO DISCIPLINE DECATHLON TOTAL SCORE RESULTS IN RELATION TO DECATHLON AGE AND RESULT-LEVEL

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Abstract

In consideration of efficiency of result achievements the most successful decathlon world 'score of different levels and ages determined the presence of a specific and different predictive contribution discipline decathlon total pointing score. A comparative analysis of the dominant predictor had found that disciplines whose outcome depends more on the technical efficiency performance than the level of training of basic motor abilities are the key determinant of the success of his score in the decathlon. It is emphasized in discipline in pole vault and then javelin, discus throw and run the 110m hurdles.

Key words: athletics, decathlon, scores, results, top level

Introduction

The scientific problem solving improves a number of different physical abilities to describe one of the greatest philosophical ideas of our time, which is defined by the Danish physicist Bohr Niehls, as the principle of subsidiarity, or replenishment (synergism - cooperation of different factors in the same process when it achieves greater effect than the sum of inputs). Under this principle, the physical-motor characteristics and habits should be seen as complementary to each other as equally important and inseparable components of motor functions, only observed together, fully describe the ontological nature of motor activity athletes (Zhelyaskov, 2003). This methodical definition of universality, integrity and complexity of the structure of the training process is clearly illustrated in event athletic discipline decathlon for men. When considering the possibility of maximum manifestation of event potential it is necessary to take into account the heterogeneous and also contingent variability structure interrelationships of disciplines contained in the decathlon in terms of the multiplicity of factors that are conditioned because they are complex relations interrelation of motor quality and skills both within one discipline, and among the qualities manifested in the order given discipline. For sport practice is necessary to determine which are the most important determinants of success in achieving a results of maximum event potential. Therefore, it is more categorical approach to research is suitable for determining the extent of unity and evolution of the decisive factors determining the success of the decathlon during their sports experience. The purpose is to make visible those features motor assembly quality that as a special form of development, each outgrow in an effort to maximize synergy apparent.

Objective and methods

This study aims to determine which disciplines and which sets a structural discipline decathlon largely explain the total credit value of at the most successful decathlon world different age and quality categories.

For this purpose was conducted a hierarchical multiple regression analysis, with the criterion variable representing the total number of points (U-BOD), while the predictor variables allocated to structural relatedness introduced into the regression equation in three sets (running, jumping and throwing). The order of introduction was chosen based on the size relationship of criteria variable, and therefore expect a larger share of the total variance of these predictors with the criterion than that which can be explained by introducing the following sets of variables to smaller correlation coefficients. Respondents made up the most successful decathlon Junior categories (N = 100), the senior category (N = 350) and the most successful world decathlon all the time (All time), taken from the statistical yearbook of the International Association of Athletics Federations (IAAF), edition 2010 / 2011th year. Interpretation of the results is partly hampered because the predictive analysis carried out on the values of the results that have been standardized by the current IAAF scoring system gymnasts for which many authors have said that they do not have the same weight of assessment (Hesse, 2004; Wang, 2007). When "All time" of the decathlon is further aggravating the presence of the application of different methods of valorisation due to frequent revision of the scoring table in their development period (Cox and Dunn, 2002).

Results

Knowledge about which variables and the structural sets of variables explain the extent to which total, evaluated the result on points (U-BOD) is shown in Table 1 summary results of the regression analysis of the three groups observed decathlon. Results of the most successful decathlon junior show that the predictor set of variables jumping discipline decathlon has extremely high significance in the prediction of the total sum of the results ($\Delta R^2_{\text{corr}} = 607$). The analysis of individual contributions can be seen that the inclusion criterion in the regression equation satisfy all the variables at the highest level as significant ($t = ,000$), of which variable

pole vault has the highest predictive value ($MOT\beta = 439$) and long jump ($DAL: \beta = ,408$). The second set of predictor variables racing discipline has a very small share in the explanation of the variance, only 9.2% ($\Delta R^2_{corr} = ,092$), although the overall show a significant contribution ($Sig. F = ,000$). The analysis of partial contributions, the criteria of inclusion in the equation satisfy the only variable

running 100m ($\beta = -.164$) and 1500m ($\beta = -.138$) and a lower level of significance $p = 0.05$. The third set of throwing disciplines explained the remaining 30% of the variance of the criterion variable. The values of the partial contributions are uniform and at the highest level of significance, and are noted for their discipline, javelin and discus throw ($\beta = .282$).

Table 1 Regression analyses of total sum of dechatlon disciplines best dechatlones on world rang list in 2010./2011.

	Blok	Model Sum.	ANOVA	Varijabla	β	T	Sig. T
JUNIORI	1.	R=,779	df=3	VIS	,304	4,36	,000
		R ² =,607	F=49,45	MOT	,439	6,82	,000
		$\Delta R^2_{corr} = ,607$	Sig.,000	DAL	,408	5,82	,000
	2.	R=,836	df=7	100m	-,164	-2,23	,028
		R ² =,700	F=30,59	400m	-,062	-,81	,420
		$\Delta R^2_{corr} = ,092$	Sig=,000	1500m	-,138	-2,11	,038
				110PRE	-,139	-1,96	,053
				KUG	,224	105,50	,000
				DISK	,282	140,77	,000
3.	R=,1,00	df=10	KOP	,282	141,39	,000	
	R ² =,1,00	F=35786,56	100m	-,212	-3,60	,000	
	$\Delta R^2_{corr} = ,300$	Sig=,000	400m	-,022	-,36	,720	
SENIORI	1.	R =,573	df=4	1500m	-,226	-4,47	,000
		R ² =,328	F=42,08	110PRE	-,400	-8,00	,000
		$\Delta R^2_{corr} = ,328$	Sig.,000	KUG	,251	7,60	,000
	2.	R =,899	df=7	DISK	,299	9,50	,000
		R ² =,808	F=205,03	KOP	,388	14,77	,000
		$\Delta R^2_{corr} = ,480$	Sig=,000	VIS	,236	191,49	,000
	3.	R=,1,00	df=10	MOT	,297	248,32	,000
		R ² =,1,00	F=73753,14	DAL	,246	185,21	,000
		$\Delta R^2_{corr} = ,192$	Sig=,000	100m	-,372	-2,65	,010
ALL TIME	1.	R=,585	df=4	400m	-,121	-1,03	,306
		R ² =,342	F=8,45	1500m	-,086	-,71	,479
		$\Delta R^2_{corr} = ,342$	Sig.,000	110PRE	-,253	-2,02	,047
	2.	R=,812	df=7	KUG	,315	3,33	,001
		R ² =,659	F=17,14	DISK	,184	1,91	,061
		$\Delta R^2_{corr} = ,317$	Sig=,000	KOP	,397	5,07	,000
	3.	R=,1,00	df=10	VIS	,395	139,83	,000
		R ² =,1,00	F=17313,57	MOT	,491	156,56	,000
		$\Delta R^2_{corr} = ,340$	Sig=,000	DAL	,452	166,64	,000

R – koeficijent multiple korelacije; R² – koeficijent multiple determinacije; R²_{corr} – korigirani koeficijent multiple determinacije; β – standardizirani regresijski koeficijent; T – T test; Sig T – significance of T test

Discussion and conclusion

Summing the results of obtained regression models can be noticed the coincidence of regression structures of two decathlon senior age groups, different from each other in the level of 'score achievements. In addition to achieve the same criterion introduction sets of variables in the equation and similar contributions to the total variance, and have almost the same dominant predictors. Opposite them, Junior decathlon categories show a slightly different structure view of disciplines that best explain the obtained final scoring record. If we consider the logic of discipline resulting high predictive value for the total scoring record of all observed groups decathlon, it is understandable that she is in part a manifestation of the dynamic, kinematic and motor characteristics that are synergistically manifested in their manifestation. By extracted representative predictor set discipline gains the knowledge of the wider context of decathlon nature structure One general feature of which is that the success of

Project result in the decathlon, on the one hand depends on the possession of natural resources and the level of preparedness of basic motor abilities, on the other hand on the level of efficiency of their performance and the level of technical preparedness. In fact, with the exception of the role of sprint discipline in which manifests the typical cyclical locomotor speed with the inherent coefficient above 0.90, and where the possibility of improving the training has been reduced to the fact that certain techniques applied move with the available individual rates and the physical constitution of each individual (Pistotnik, 2003).

This leads to the next application in the development of potential of decathlon relating to technical efficiency. Most disciplines in decathlon area has a complex and mutually different movement structures with a pronounced technical and coordination requirements and the good part of the training process should be separated for training movement and commitment to the formation of dynamic stereotypes.

In doing so, emphasizes discipline pole vault, which represents the entire technical-motor preparedness of decathlones given that contains a structure of movement that requires quality sprinting, jumping and throwing skills with additional requirements specific spatio-temporal orientation through interaction jumper Sprit (Arampatzis and Brüggemann, 1998). Discipline running the 110m hurdles also represents the complexity of the structure of performance which, in addition to possessing the potential speed and technical efficiency, there is an important prerequisite that refers to a certain height of the body and the vertical impulse and reflex senior position OCT (Wilson et al., 2004). Discipline long jump which is to a greater or lesser extent, emerging as the dominant predictor decathlon success at all three levels of decathlon development, confirms earlier findings about generally the best predictor of speed, explosive quality individual. On the other hand, established by persistent presence disciplines javelin throw and then throw the disc in a representative set of predictors most successful decathlon gets more complete performance of the entire concept of nature decathlon. The decathlon is one of the open-type sports which means that in its structure has a changing situation. Since decathlone program takes place in two consecutive-day occasions, tasks are changing from moment to moment due to the variable and unpredictable environmental conditions. This refers mainly to the manipulation devices crucial for the realization of throwing disciplines. Kinematic characteristics of these disciplines are such that the value of the result (the length of the shot), significantly affect the speed and direction of wind, temperature and air pressure, which in certain circumstances could adversely affect the final result, but also can affect the (aerodynamic) a resulting gain of 5-7 meters (Zatciorsky, 2000). Therefore, in determining the real level of manifested motor efficiency of these disciplines can safely conclude the more so as the

results observed in this study decathlon achieved in various competitions. Furthermore, in such a dynamic situation demands, undoubtedly the decathlon forced constant adjustment, with the increased cognitive load through the constant perception changes, rapid response and decision-making. This statement is largely related to decathlon juniors who have shown a difference in the structure of disciplines that contribute the most to his score of efficiency versus older decathlon. It is significant that their dominant predictor set of jumping discipline has features of mutual kinship in manifestations of motor dimensions but markedly different in structure execution. This is explained as a result of the intense dynamics of the progressive development of motor potential adoption of motor skills and the formation of stereotypes of movement, which is within the junior age, subject to frequent changes and focused more on the development of speed-strong quality (Qada, 1991; Kabitsis et al., 1992; Jeřábek, 2003). One can therefore conclude that the achievement of results in the decathlon at the decathlon different 'score levels and ages present specific and different predictive contribution discipline decathlon total pointing imminent, and that disciplines which require greater technical readiness and efficiency during the manifestation are the key to success. Those differences are primarily related to junior age category compared to decathlon seniors where it was found that the highest level of results achieved through a balanced contribution to the discipline by branches of athletics. Discipline pole vault is the most important determinant of the result efficiency and then spears throwing, disc throw and run the 110m hurdles. These findings coincide with previous study that is determined that speed and explosive power of the most important skills in the decathlon, and that the highest scoring results are achieved in the "natural" events and smaller in technically complex (Etcheverry, 1995; Knocked, 2003).

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DOPRINOS DISCIPLINA DESETOBOJA UKUPNOM BODOVNOM REZULTATU U ODNOSU NA UZRAST I REZULTATSKU RAZINU DESETOBOJACA

Sažetak

Pri sagledavanju efikasnosti rezultatskih ostvarenja najuspješnijih desetbojaca svijeta različitog rezultatskog nivoa i uzrasta, utvrđena je prisutnost specifičnog i različitog prediktivnog doprinosa disciplina desetboja ukupnom bodovnom rezultatu. Usporednom analizom dominantnih prediktora utvrđeno je da discipline čiji rezultat više ovisi o tehničkoj efikasnosti izvođenja nego o razini utreniranosti bazičnih motoričkih sposobnosti, predstavljaju presudne odrednice rezultatske uspješnosti u desetboju. Pri tome je istaknuta disciplina skok s motkom a potom bacanje koplja, bacanje diska i trčanje 110m s preponama.

Ključne riječi: atletika, desetboj, bodovi, rezultati, vrhunska razina

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