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Specifics of conative characteristics of track-and-field athletes and basketball players

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Abstract

The research was conducted in order to determine differences in cognitive dimensions between track-and-field athletes and basketball players.

For the purpose of determining the structures and their differences in manifest and latent cognitive spaces, 100 male respondents aged 14 and 18 were tested. This sample can be considered representative of athletes of those ages.

For the assessment of conative characteristics, the researchers applied 13 primary variables selected so as to perform the structure analysis on the basis of the cybernetic model of conative factors designed by (Momirovic, Horga & Bosnar, 1982), taking into account the subjects of assessment: the mechanism for the regulation and control of organic functions, mechanism for the regulation and control of defense reactions, mechanism for the regulation and control of attack reactions, and the mechanism for homeostatic regulation.

All the data in this study were processed at the Multidisciplinary Research Center of the Faculty of Sport and Physical Education, University of Pristina, through the system of data processing software programs developed by Popovic, D. (1980), (1993) and Momirovic, K. & Popovic, D . (2003). In order to determine differences between the groups, canonical discriminant analysis was applied.

The researchers calculated the discriminant coefficient values, canonical correlation coefficients, percentage of the explained group variability, Bartlett`s chi-square test value, degrees of freedom, Wilks' Lambda values, and error probability in the rejection of the hypothesis that the true canonical correlation value is equal to zero.

They also calculated the standardized coefficients of involvement of the tests in the formation of significant discriminant functions, as well as the centroids of the significant discriminant functions.

The results of the discriminant analysis in cognitive space are shown in Table 3 and through its careful analysis, it can be determined that two significant canonical correlations, and therefore, two discriminant functions, were obtained.

1. Introduction

Success in all activities depends on the psychosomatic personality dimensions. For this reason, in order to achieve top results, it is necessary to carry out timely and accurate sport orientation and selection of the persons whose structure of psychosomatic characteristics is best suited for a particular sport discipline. It is known that for superior athletic performance, a large amount and high intensity of exercise are required. In order to optimize athletic training, studies contributing to changes of this process are constantly conducted. This is understandable considering the fact that a person`s achievements are confined to his or her potentials.

Therefore, the experts` obligation is to find, among other things, new methods that permit the identification of factors, or psychosomatic dimensions, which are responsible for achieving success in sport activities. With the advent of theoretical-research orientation in kinesiology which requires the inclusion of situational variables in behavior prediction, an interactionist model was constructed to be used in the examination of individuals who are engaged in some activity.

In sport, this orientation acquired a particularly large number of supporters, due to, among other things, the specificity of the sport activity, its complexity, analyzability, requirements it imposes on athletes in accordance with the performance levels, etc. It opens space for the study of new problems and provides opportunities, regardless of the complexity of its implementation, to determine specific factors

which should be taken into consideration in the process of preparation of athletes and their influence on the behavior changes relevant for success in sport.

While earlier studies were limited to the determination of the structure and differences in the structure of certain psychosomatic characteristics, or differences in their manifestation, today the research area is extending to the study of the nature, differences and specificities of certain sports. This reliably suggests the need to possess certain abilities and psychosomatic characteristics in order to succeed in a sport. Therefore, the aim of this study is to apply appropriate methodological procedures for determining the specificities of anthropological dimensions and their differences with regard to the preferred kind of sport and to classify sports on the basis of psychosomatic requirements.

2.1. Sample of respondents

The selection of the sample of respondents is conditioned, among other things, by the organizational and financial capabilities necessary for the implementation of the research process.

It was necessary to ensure a sufficient number of qualified and fully trained measurers, appropriate instrumentation and standardized conditions to carry out the research. Limited financial resources and organizational capabilities influenced the decision to perform the measurement not throughout Kosovo and Methohia, but only in one of its regions.

The research was conducted on randomly selected samples representative of whole Kosovo and Methohia. The measurement was performed in the following sports: track-and-field and basketball. In order to conduct the research correctly, and obtain stable enough results in terms of the sampling error, it was necessary to include a sufficient number of respondents in the sample. The sample size for this type of research was conditioned by the objectives and tasks of the research, the population size and the degree of variability of the applied system parameters. In addition, the number of respondents in the sample depends on the level of statistical inference and the choice of mathematical and statistical models.

Based on the chosen statistical-mathematical model and program, objectives and tasks, 100 respondents were included in the sample. In all factor procedures, it should constantly be kept in mind that the analysis results depend on three main systems that determine the selection and transformation of information: a sample of variables, sample of respondents and selected extraction or rotary methods. Taking into account these criteria, based on experience from previous studies, a sample of 100 respondents is considered to be sufficient for this study. In defining the population from which the sample was drawn, except for the above, no other restrictions or stratification variables were applied.

2.2. Sample of variables for assessment of conative characteristics

There are a number of theories about the structure of conative factors based on empirical data which can be formulated in the form of structural or functional models and allow for an objective verification of the adequacy of these theories: (Cattell, 1973), (Eysenck, 1953). Measurement instruments were constructed on the basis of these theories and used in numerous factor studies. The cybernetic model of conative functions designed by Yugoslav authors (Momirovic, Horga & Bosnar, 1982), served as a basis in this research.

The model assumes a hierarchical organization of the following mechanisms for the regulation and control of behavioral modalities: the mechanism for the regulation and control of organic functions, mechanism for the regulation and control of defense reactions, mechanism for the regulation and control of attack reactions, mechanism for homeostatic regulation, mechanism for the integration of regulatory functions, and the mechanism for the regulation of excitation and inhibition.

1. The mechanism for regulation and control of organic functions is defined by the effectiveness of the coupling between the efficiency subcortical regulatory functions, organic systems and superior cortical systems for regulation and control.

   Disorders of this system are manifested by functional disorders of the basic organic

   systems such as cardiovascular, respiratory and gastrointestinal systems, and by

   functional disorders of the basic systems for input and output operations.

2. The mechanism for regulation and control of defense reactions is defined by the appropriate modulation of tonic arousal, probably on the basis of the adequacy of the programs that are genetic in origin or formed during their development (as a rule, under the influence of conditioning) and located in the (hypothetical) center for regulation of defense reactions.

   Disorders of the system for regulation of defense reactions are manifested by various anxiety symptoms and form a basis for specially modulated pathological reactions such as phobias, obsessions and compulsions.

3. The mechanism for regulation and control of attack reactions is also defined by the appropriate modulation of tonic arousal on the basis of the adequacy of the programs transferred by genetic code or formed under the influence of conditioning and located in the (hypothetical) center for regulation of attack reactions.

Disorders of the system for regulation and control of attack reactions are manifested in a variety of aggressive reactions and weak control of direct impulses.

4. The mechanism for homeostatic regulation is determined by the coordination of activities of functionally and hierarchically different subsystems, including, in particular, the coordination of functions of conative regulatory systems and cognitive processors. Therefore, the system for homeostatic regulation is functionally superior to the systems for regulation of organic functions, defense reactions and attack reactions, and it also controls the processes taking place in the system for regulation of excitation and inhibition.

   Disorders of the system for homeostatic regulation cause dissociation and disorganization of conative and cognitive processes, including motor functions which depend on the system for movement structuring.

   Schizoid, paranoid and manic symptoms are a direct product of disorders of this system. Severe disorders of this system produce disturbances in the functioning of all the systems that are functionally subordinate to it.

5. The mechanism for integration of regulatory functions is responsible for the integration of conative regulatory processes under the guise of the structure of the social field and changes in that field. The set of programs which determine its functioning is mainly formed during the educational process. Social disadaptation is a direct consequence of functional disorders of this mechanism.

6. The mechanism for regulation of excitation and inhibition is one of the elementary and lowest located systems in the hierarchy. Its function is to regulate and modulate the activating functions of the reticular formation, and therefore, it is directly responsible for the activity and the energy level at which other subsystems, including cognitive processes, function. Extroverted and introverted behavior models depend on the functioning of this system.

   Disturbances of this system can produce an energy basis for hypomanic or depressive reactions, and they probably affect the speed of the information flow in the central nervous system**.**

Measurement instruments were selected for this study so that they could cover the dimensions of the model of the functioning of conative regulatory mechanisms designed by (Momirovic, Horga, & Bosnar. 1982). [1]The model assumes hierarchical organization of the mechanism for regulation and control of behavior modalities and is constructed so as to avoid artificial dichotomy between normal and pathological conative factors.

1 The system for integration of regulatory functions is not assessed in this study.

The researchers selected the following measurement instruments:

1. To assess the effectiveness of the system for regulation and control of organic functions:

- (CAVC) cardiovascular conversion from the battery C.I. - N4
- (GAIC) gastrointestinal conversion from the battery C.I. - N4
- (INHC) inhibitor conversion from the battery C.I. - N4
- (HYPC) hypochondria from the battery C.I. - N4.

2. To assess the effectiveness of the system for regulation and control of defense reactions:

- (ANXT) anxiety from the battery C.I. - N4
- (OBS) obsessiveness from the battery C.I. - N4
- (HYPS) hypersensitivity from the battery C.I. - N4
- (PHOB) phobias from the battery C.I. - N4.

3. To assess the effectiveness of the system for regulation and control of attack reactions:

- (IMPULS) impulsiveness from the battery C.I. - N4
- (AGGR) aggressiveness from the battery C.I. - N4.

4. To assess the effectiveness of the system for homeostatic regulation:

- (PARN) paranoidness from the battery C.I. - N4
- (DEPS) depressiveness from the battery C.I. - N4.[2]

2.3. Data processing methods

The value of a research depends not only on the sample of respondents and sample of variables, that is, the values of basic information, but also on the applied

2 The author of the standardization of Cornell`s index version (C.I.-.N4) is Momirovic K., (1964).

procedures for transformation and condensation of the information. Some scientific problems can be solved with the help of a number of different, and sometimes equally valuable, methods. However, with the same basic data, different conclusions can be drawn from the results of different methods. Therefore, the problem of selecting certain data processing methods is rather complex.

In order to obtain satisfactory scientific solutions in a research, it is necessary to use, in the first place, correct, then adequate, unbiased and comparable procedures, which correspond to the nature of the problem and provide extraction and transformation of appropriate dimensions, the testing of hypotheses about those dimensions and establishment of basic regularities within the research area.

Taking this into account, for the purposes of this study, the researchers selected those procedures that were considered to correspond to the nature of the problem.

To determine differences between the groups, a method of discriminant analysis was applied. The researchers calculated the discriminant coefficient values (Eigenval.), canonical correlation coefficients (Can. Cor.), percentage of the explained group variability (chi-square test (Chi)), degrees of freedom (DF), Wilks' Lambda values (W.L.), and error probability in the rejection of the hypothesis that the actual canonical correlation value is equal to zero (Sig).

They also calculated the standardized coefficients of participation of the tests in the formation of significant discriminant functions, as well as the centroids of the groups on the significant discriminant functions.

All the data in this research were processed at the Multidisciplinary Research Center of the Faculty of Sport and Physical Education, University of Pristina, through the system of data processing software programs developed by Popovic, D. (1980), (1993) and Momirovic, K. & Popovic, D. (2003).

Canonical discriminant analysis in Mahalanobis space

Canonical discriminant analysis can now be defined as a solution of the quasi-canonical problem $\mathbf{M}\mathbf{x}_k = \mathbf{k}_k$, $\mathbf{G}\mathbf{y}_k = \mathbf{l}_k | c_k = \mathbf{k}_k{}^t\mathbf{l}_k$ = maximum, $\mathbf{x}_k{}^t\mathbf{x}_q = \mathbf{y}_k{}^t\mathbf{y}_q = \delta_{kq}$ k = 1,...,s; s = min((g - 1), m) = m where δ_{kq} is the Kronecker symbol and $\mathbf{x}_k$ and $\mathbf{y}_k$ are unknown m-dimensional vectors.

As $c_k = \mathbf{x}_k{}^t\mathbf{A}\mathbf{y}_k$, the function to be maximized is, for k = 1, $f(\mathbf{x}_k, \mathbf{y}_k, \lambda_k, \eta_k) = \mathbf{x}_k{}^t\mathbf{A}\mathbf{y}_k - 2^{-1}\lambda_k(\mathbf{x}_k{}^t\mathbf{x}_k - 1) - 2^{-1}\eta_k(\mathbf{y}_k{}^t\mathbf{y}_k - 1)$.

After differentiating this function by elements of vectors $\mathbf{x}_k$, $\partial f/\partial \mathbf{x}_k = \mathbf{A}\mathbf{y}_k - \lambda_k\mathbf{x}_k$, and after differentiating it by elements of vectors $\mathbf{y}_k$, $\partial f/\partial \mathbf{y}_k = \mathbf{A}\mathbf{x}_k - \eta_k\mathbf{y}_k$; after equalizing with zero, $\mathbf{A}\mathbf{y}_k = \lambda_k\mathbf{x}_k$ and $\mathbf{A}\mathbf{x}_k = \eta_k\mathbf{y}_k$.

Through differentiating by λ_k and η_k, from the condition that $\mathbf{x}_k{}^t\mathbf{x}_k = 1$ and $\mathbf{y}_k{}^t\mathbf{y}_k = 1$, it is easily obtained that $\lambda_k = \eta_k$. As $\mathbf{A}^t = \mathbf{A}$, by multiplying the first result by $\mathbf{x}_k{}^t$

and the seconf result by $\mathbf{y}_k^t$, $\mathbf{x}_k^t\mathbf{A}\mathbf{y}_k = \lambda_k$ and $\mathbf{y}_k^t\mathbf{A}\mathbf{x}_k = \lambda_k$, so $\mathbf{x}_k = \mathbf{y}_k$ and the problem comes down to an ordinary problem of eigenvalues and eignevectors of matrix **A**, or the solution of the problem $(\mathbf{A} - \lambda_k\mathbf{I})\mathbf{x}_k = \mathbf{0}$, k = 1,..., m, and $c_k = \rho_k^2 = \mathbf{x}_k^t\mathbf{A}\mathbf{x}_k = \lambda_k$, k = 1,..., m are squares of the canonical correlations between linear combinations of variables from **M** and **G** which are proportional to the differenciation of centorids of the subsamples defined by selector matrix S in the space spanned by the vectors of variables from **M**.

Let $\rho^2 = (\rho_k^2)$, k = 1,..., m be a diagonal matrix whose elements are squares of canonical correlations, let $\mathbf{X} = (\mathbf{x}_k)$, k = 1,..., m be a matrix of eigenvectors obtained by solving the canonical discriminant problem, let $\mathbf{K} = \mathbf{M}\,\mathbf{X}$ be a matrix of discriminant functions and let L = GX = PMX be a matrix of the discriminant functions projected into the hypercube defined by vectors of matrix **S**. As $\mathbf{K}^t\mathbf{L} = \mathbf{X}^t\mathbf{A}\mathbf{X} = \rho^2$ and as, of course, $\mathbf{K}^t\mathbf{K} = \mathbf{I}$ and $\mathbf{L}^t\mathbf{L} = \rho^2$, the canonical discriminant analysis produces two biorthogonal sets of vectors of variables by such transformation of the vectors of variables from **M** and **G** that orthogonalizes those vectos and maximizes cosines of the angles between the corresponding vectors from **K** and **L**, with the additional condition that cosines of the angles of non-corresponding vectors from **K** and **L** are equal to zero because correlations between variables from **K** and **L** are $\mathbf{K}^t\mathbf{L}\rho^{-1} = \mathbf{X}^t\mathbf{A}\mathbf{X}\,\rho^{-1} = \rho$.

Vectors $\mathbf{x}_k$ from **X** are, obviously, the vectors of standardized partial regression coefficients of variables from **M** that generate discriminant functions $\mathbf{k}_k$ which, together with discriminant functions $\mathbf{l}_k$ formed by the vectors of standardized partial regression coefficients $\mathbf{x}_k$ of variables from **G**, have maximum correlations. But as $\mathbf{M}^t\mathbf{K} = \mathbf{X}$, the elements of matrix **X** are, at the same time, the correlations of variables from **M** and discriminant variables from **K** , which, unlike the standard canonical discriminant model, allows for easy testing of hypotheses on partial impact of variables on the formation of discriminant functions. For the identification of discriminant functions, the cross structure matrix elements defined as correlations between variables from **M** and **L**, that is, the elements of matrix $\mathbf{Y} = \mathbf{M}^t\mathbf{L}\rho^{-1} = \mathbf{A}\mathbf{X}^{-1}\rho = \mathbf{X}\rho$, can also be of certain significance; note, by the way, that **Y** is a factor matrix of matrix **A** because, naturally, $\mathbf{Y}\mathbf{Y}^t = \mathbf{X}\rho^2\mathbf{X}^t$.

As elements x_{jk} of matrix **X** and elements y_{jk} of matrix **Y** are ordinary correlations, their asymptotic variances are $\sigma_{xjk}^2 = (1 - x_{jk}^2)^2n^{-1}$, respectively $\sigma_{yjk}^2 = (1 - y_{jk}^2)^2n^{-1}$, therefore, hypotheses of type H_{0xjk}, or H_{0yjk}, can be tested on the basis of the functions $f_{xjk} = x_{jk}^2((n - 2)(1 - x_{jk}^2))$, or $f_{yjk} = y_{jk}^2((n - 2)(1 - y_{jk}^2))$, because under these hypotheses, the functions have the Fisher Snedecor F-distribution with the degrees of freedom $\nu_1 = 1$ and $\nu_2 = n - 2$.

Unfortunately, with usual application of canonical discriminant analysis, the main, and often the only, set of hypotheses related to the parameters of that model

is the set $H_0 = \{\varphi_k = 0, k = 1,..., m\}$ where φ_k are hypothetical values of canonical correlations in population **P**.

To test hypotheses of type H_{0k}: $\varphi_k = 0$ k = 1,..., m, researchers usually apply the function of the known Wilks measure $\lambda_k = \Sigma_{t+1}^{s} \log_e (1 - \rho_{t+1}^2)$ k = t + 1, t = 0, 1,..., m – 1 proposed by Bartlett (1941) who found that under the hypothesis H_{0k}: $\varphi_k = 0$, the functions $\chi_k^2 = -(n - (m + g + 3)/2)\ \lambda_k$ k = 1,..., m have, approximately, χ^2 distribution with the $\nu_k = (m - k + 1)(g - k)$ degrees of freedom.

However, the results of Bartlett`s test are not, even when dealing with large samples, in full accordance with the results of the tests of type $z_k = \rho_k/\sigma_k$ k = 1,...,s which are based on the fact that canonical correlations also have asymptotic normal distributions with parameters φ_k and $\sigma_k^2 \sim (1 - \varphi_k^2)^2 n^{-1}$. (Kendall & Stuart, 1968); Anderson, 1984).

Centroids of subsamples E_p, p = 1,..., g from E on the discriminant functions necessary to identify the content of the discriminant functions are, of course, the elements of the matrix $\mathbf{C} = (\mathbf{S}^t\mathbf{S})^{-1}\mathbf{S}^t\mathbf{K} = (\mathbf{S}^t\mathbf{S})^{-1}\mathbf{S}^t\mathbf{M}\mathbf{X} = (\mathbf{S}^t\mathbf{S})^{-1}\mathbf{S}^t\mathbf{Z}\mathbf{R}^{-1/2}\mathbf{X}$, and it is clear that they are, in fact, the centroids of the subsamples on the variables transformed into a Mahalanobis form projected into the discriminant space.

DISC PROGRAM

This algorithm is almost literally implemented into DRDISC program written in a matrix language so that it can be realized in the standard SPSS environment. The activation method and some details of the program can be seen from the program symbolic code which is stored at the Multidisciplinary Research Center of the Faculty of Sport and Physical Education, and clear instructions for correct application of the canonical discriminant analysis are given. Modification of the program and its implementation in the SAS environment were carried out by Popovic D. in 2004, and the scientist interested in its application can contact the author any time.

3. Discussion

The results of the discriminant analysis in cognitive space are shown in Table 1, and its careful analysis reveals that two significant canonical correlations (.64, .47) explaining 71.68%, respectively 28.32%, of the valid variance of the overall system of the evaluated space have been obtained.

The first discriminant function is defined by the inhibitor conversion, gastrointestinal conversion and cardiovascular conversion which assess the effectiveness of the system for regulation and control of organic functions. It is also defined by depressiveness that estimates the effectiveness of homeostatic regulation.

Based on the value and sign of the projection of the centroid for the first discriminant function, it can be seen that track-and-field athletes have good regulation and control of organic functions defined by the effectiveness of the coupling between subcortical regulatory functions of the organic systems and superior cortical systems for regulation and control.

Further analysis shows that basketball players have a well-built mechanism for homeostatic regulation which is determined by the coordination of activities of functionally and hierarchically different subsystems, including, in particular, the coordination of functions of conative regulatory systems and cognitive processors. These two associated regulatory mechanisms are superior mechanisms for control of defense reactions and attack reactions, and they also control the processes taking place in the system for regulation of excitation and inhibition. Basketball players are more depressed, which is probably caused by a variety of situations that a basketball match imposes.

The second function is defined by obsessiveness and hypersensitivity, paranoidness and aggression. The first two factors assess the mechanism for regulation and control of organic functions, the second factor assesses the mechanism for homeostatic regulation, and the third factor assesses the mechanism for regulation and control of attack reactions. Based on the value and sign of the centroid on the second discriminant function, the following can be concluded: track-and-field athletes have the ability to adequately model tonic arousal on the basis of the programs transferred by the genetic code or formed under the influence of learning that are also located in the center for regulation of attack reactions. They are able to coordinate functionally and hierarchically different subsystems, both cognitive and conative. Then, they are able to effectively make a connection between subcortical regulatory functions of organic systems and cortical systems that perform their regulation and control.

DISCRIMINANT FUNCTIONS IN CONATIVE SPACE

Table 1

Func.	Eigenval.	Var. %	Cum. %	Can.Cor.	Wilks' Lam	Chi^2 - test	DF	Sig
1*	.72	71.68	71.68	.64	.44	192.33	22	.00
2*	.28	28.32	100.00	.47	.77	60.80	10	.00

STRUCTURE MATRIX

	FUNC 1	FUNC 2
INHC	.27*	-.26
GAIC	.26*	-.16
CAVC	.15*	-.07
DEPS	-.12*	-.01
OBS	-.36	-.55*
HYPS	.27	-.55*
PARN	-.12	-.49*
TOTA	.09	-48*
AGGR	-.15	-41*
HYPC	.12	-.40
IMPULS	.11	-.38
PHOB	.06	.26
ANXT	.03	-.08

CENTROIDS OF THE GROUPS

GROUP	C1	C2
Track-and-field athletes 1	.66	-.52
Basketball players 2	-1.14	-.03

4. Conclusion

The research was conducted in order to determine differences in cognitive dimensions between track-and-field athletes and basketball players.

For the purpose of determination of the structures and their differences in manifest and latent cognitive spaces, 100 male respondents aged 14 and 18 were tested. This sample can be considered representative of athletes of those ages.

For the assessment of conative characteristics, 13 primary variables selected so that the structure analysis could be performed on the basis of the cybernetic model of conative factors designed by (Momirovic, Horga, & Bosnar. 1982) to assess the following: the mechanism for regulation and control of organic functions, mechanism for regulation and control of defense reactions, mechanism for regulation and control of attack reactions, and the mechanism for homeostatic regulation.

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The researchers calculated the discriminant coefficient values, canonical correlation coefficients, percentage of the explained group variability, Bartlett`s chi-square test values, degrees of freedom, Wilks' Lambda values, and error probability in the rejection of the hypothesis that the actual canonical correlation value is equal to zero.

They also calculated the standardized coefficients of participation of the tests in the formation of significant discriminant functions, as well as the centroids of the groups on the significant discriminant functions.

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centroid for the second discriminant function, the following can be concluded: track-and-field athletes have the ability to adequately model tonic arousal on the basis of the programs transferred by the genetic code or formed under the influence of learning that are located in the center of regulation of attack reactions. They are able to coordinate functionally and hierarchically different subsystems, both cognitive and conative. Then, they are able to efficiently make a coupling between subcortical regulatory functions, organic systems and cortical systems which perform their regulation and control.

In addition, some of these relations made it possible to put forward a hypothesis about different effectiveness of the functioning of regulatory mechanisms in the central nervous system depending on the type of sports activity.

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Specifičnosti konativnih karakteristika atletičara i košarkaša

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Sažetak

Istraživanje je sprovedeno sa ciljem da se utvrde razlike u konativnim dimenzijama između atletičara i košarkaša.

U svrhu utvrdivanja strukture i njihovih razlika u manifestnom i latentnom konativnom prostoru ispitano je 100 ispitanika muškog pola, starih 14 i 18 godina. Ovaj uzorak se može smatrati reprezentativnim za sportiste tog uzrasta.

Za procenu konativnih karakteristika primenjeno je 13 primarnih varijabli koje su odabrane tako da se struktura analize vrši na osnovu kibernetskog modela konativnih faktora Momirovića i sar. (1982), vodeći računa o tome da se procenjuje: mehanizam za regulaciju i kontrolu orga.nskih funkcija, mehanizain za regulaciju i kontrolu odbrambenih reakcija, mehanizam za regulaciju i kontrolu reakcije napada, mehanizam za homeostatičku regulaciju.

Svi podaci u ovom istraživanju su obrađeni u centru za multidisciplinarna istaživanja Fakulteta za sport i fizičko vaspitanje Univerziteta u Prištini pomoću sistema programa za obradu podataka koji je razvio Popović, D. (1980), (1993) i Momirović, K. i Popović, D. (2003). Da bi se utvrdila razlika izmedu grupa primenjena. je kanonička diskriminativna analiza.

Izračunate su i vrednosti koeficijenta diskriminacije, koeficijenti kanoničke korelacije, procenat objašnjenog grupnog varijabiliteta, vrednost Barttletovog hikvadrat testa, stepeni slobode, vrednosti Wilks' Lambda. i oznaka verovatnoće greške pri odbacivanju hipoteze da je stvarna vrednost kanoničke korelacije jednaka nuli.

Takode su izračunati normirani koeficijenti učešća testova u formiraiiju značajnih diskriminativnih funkcija, kao i centroidi grupa na značajnim diskriminativnim funkcijama.

Rezultati diskriminativne analize u konativnom prostoru prikazani su u tabeli 3. i pažljivom analizom može se utvrditi da su dobijene dve značajne kanoničke korelacije, pa prema toine i dve diskriminativne funkcije.

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