THE STRUCTURE OF REDUCED POTENTIAL PERFORMANCE MODEL IN SKI JUMPING

by

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The purpose of this study was to establish on a sample of 50 best Slovene ski jumpers the structure of reduced model of potential performance in ski jumping by means of a decision expert system called "Sport Expert - SPEX". In the first phase, a model of the so-called competition and potential performance was constructed. Thus, elementary and derived morphological-motor and psychological variables were included into the model of potential performance. The two subspaces of the variables, both, the morphological-motor and the psychological, were statistically significantly correlated with the competition performance of ski jumpers in the 1997/98 season (Mult R=.76, Rsq R=.58, Sig F=.00). Using the selected variables it was possible to explain 46% of the performance variance within the morphological-motor space (Mult R=.68, Rsq R=.46, Sif F=.00), and 51% of the performance variance within the psychological subspace (Mult R=.71, Rsq R=.51, Sig F=0.00). The contribution of the psychological space to the formation of a common regression equation – in whose formation of transformed values of morphological-motor and psychological spaces was used – was slightly larger (Beta=0.44).

Key words: ski jumping, performance, decision expert system – SPEX, morphology, motor abilities, psychology

Introduction

One of the important objectives of the theory of sport is the description, explanation and interpretation of the culture and organizational culture of sports. The theory of sport as a pronouncedly interdisciplinary, multidisciplinary, cross-disciplinary and integral theory aims at encompassing all essential issues of sports. New hypotheses are constantly verified and new theoretical problems and issues raised. The formation of new knowledge in the field of theory of sport is a demanding process; however, it is indispensable for the improvement and understanding of sport. One of the basic

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problems nowadays is successful performance of athletes, which is dealt with by the theory of competition performance and the system of preparation of athletes (Jošt, 1998). A special problem of the theory of performance of athletes represents the evaluation and assessment of performance. To assess performance it is necessary to formulate criterion and sub-criterion variables of performance and to set up qualitative categories by means of which performance will be assessed. From the aspect of cause and effect, performance of athletes could be divided into attained actual performance and into potential anticipated performance (Jošt 1998). Performance of athletes in the system-cybernetic sense depends on the web of three levels of factors (macro, meso and micro). The theory of performance and the system of preparation of athletes should solve several questions. The answer to these questions, however, requires the formulation of a suitable knowledge base, the construction of a suitable expert system shell and the solving of certain problems. Expert systems become more frequent form of methodological aids in solving the problems in the field of the theory of performance.

The object of the present research was to establish the structure of competition and potential performance of high-level ski jumpers. The knowledge of a reduced potential performance model of ski jumpers (RPPM) was formed to include the variables of the morphological, motor and psychological space. The problem of the creation of the dimensional configuration of the variables of the performance model was solved by the application of the shell of the system "Sport expert". The frame of reference for the variables of RPPM was set on the basis of the theories dealing with the issues of the morphological-motor and psychological behavior. The problem and goal of the research has been to establish the structure of the dimensional configuration of the variables of the competition and RPPM of ski jumpers and to establish the relations between the dimensions of the RPPM (=model variables) and competition performance in ski jumping.

The basic hypothesis of the research was that the sample of ski jumpers significantly differed in the attained competition performance in the 1997/98 season and that the differences in performance were associated with the variables by means of which it is possible to describe and explain the anthropological manifest characteristics of the morphological-motor and psychological behavior of athletes.

Material and Methods

To solve the problem of the task and to verify the basic hypothesis of the research, a shell of the expert system "Sport Expert-SPEX" was used.

The basic structure of the expert system SPEX is described in Jošt et al. (1998). The sample covered 50 Slovene ski jumpers aged 15 years and more. The sample of independent variables represented the elementary dimensions of the potential performance model in the morphological, motor and psychological space. The criterion variable of performance was determined on the basis of the mark of competition performance of ski jumpers in the 1997/98 season. The competitions differed in the degree of difficulty. According to this, their qualitative balancing was necessary. The actual value of points for an individual competition achievement (T) was calculated according to the following formula:

$$T = 1000 / (x + 9)$$

T – points of competition performance
x – the attained place at individual competitions

The final value of points of competition performance (PP) was calculated according to the formula:

$$TU = T*Bx\ (X1, ..., Xn)$$

Bx – weight of the competition performance varying from 0.0 to 1.00

The transformation of raw values of the elementary variables of the RPPM into transformed scales of potential performance marks was carried out by means of expert knowledge, which included heuristic rules of conclusion drawing and the so-called normalizers. The limits of individual marks of performance were based on the assumption of linearity between the criterion and all sub-criteria of the potential performance model. In the first phase of the transformation of raw data, the linearity of the relationships was therefore tested in all variables and immediately thereafter; the linearization of the basic data was also carried out in the variables involving typical non-linear relationships. According to the principles of decomposition, correlation and subordination, all derived variables were obtained as linear combinations of the transformed elementary variables. In formulating the decision expert system “Sport Expert-SPEX” there was applied the formalism of the knowledge base, which is based on the so-called graphical linear decision tree (Mallach 1994).

Results and Discussion

The results by means of which it is possible to establish the correlation between competition and potential performance of ski jumpers, expressed with the variables of the morphological-motor and psychological space, are shown in Table 1.

Table 1. Regression analysis of the correlation between competition performance and variables of the morphological-motor and psychological space

SPACE	**B**	**Beta**	**St. Err.**	**T**	**Sig T**
MORPHOLOGICAL-MOTOR	7.38	0.37	3.22	2.29	.02
PSYCHOLOGICAL	8.37	0.44	3.05	2.74	.01
Mult R=.76	**Rsq R=.58**		**Sig F=.00**	**F=23.70**	

The correlation between competition performance of Slovene ski jumpers in the 1997/98 season and their reduced potential performance defined by the sample of morphological-motor and psychological variables was statistically significant (Sig F≤.00). Thus it was on the whole possible to explain 58% of the variance of performance of ski jumpers. The psychological space contributed to the formation of the regression equation a slightly larger share (Beta=0.44; Sig T=.01) as established for the variables of the morphological-motor space (Beta=0.37; Sig T=.02). The obtained results confirm the apriori hypothesis on the significance of model variables. Especially significant is the share of psychological variables that significantly form the psychological part of the personality of ski jumpers. The psychological dimensions of a ski jumper have influence on the engagement of all those psychosomatic mechanisms and synergies (among these we rank the morphological-motor synergies and mechanisms) without which no movement, irrespective of the manifestation of the technique, can be executed. Therefore it is also necessary that the results of this research should be understood only in the sense of a specially derived methodological construct, which in a specific way separately deals with the individual subsystems of the model of performance of ski jumpers. However, while dealing with them it does never forget that the final result of the athlete is always the product of a synergetic action of both the dimensions of the psychosomatic status and all the systematic and unsystematic factors and their interaction effects that originate from the environment.

The results of regression analysis between the criterion variable of performance of ski jumpers (POINTS) and the derived predictor morphologi-

cal-motor variables of the RPPM (after the completed transformation into the marks of potential performance at the level of elementary variables by means of the SPEX method) are presented in Table 2. The morphological and motor variables ranked into the RPPM were in a relatively high multiple correlation (Mult R=.68; Sig F=.00) on the basis of which it was possible to explain approximately half of the variance of performance of ski jumpers (Rsq R=.46). The two basic predictors in the regression equation by means of which the final predicted performance of ski jumpers was assessed were aggregated (linearly calculated) variables of the basic morphological-motor status (BASICS MORPHOLOGIC MOTOR SPACE) and special morphological-motor status (SPECMORMOTST). The first variable contributed to the formation of the linear regression function a relevant share (Beta=0.58). The second variable, whose coefficient of multiple correlation (Mult R=.51) was statistically significant (Sig F=.00) at less than 1% of statistical error risk, contributed to the formation of the regression equation a statistically irrelevant value (Beta=0.14; Sig T=.33). In the space of the variables by means of which the aggregated mark of the sub-criterion (BASICS MORPHOLOGY MOTOR SPACE) was calculated there dominated, from the aspect of multiple correlation with the criterion of performance of ski jumpers, the mark of the basic motor status (MOTORICS) with the value of the coefficient of multiple correlation (Mult R=.58). The described variable – which was obtained by means of the mechanism of conclusion drawing according the SPEX method as a linear combination of the elementary motor variables – explained approximately one third of the variance of performance of ski jumpers (Rsq R=.34). The variables which formed the linear multiple function in the morphological space of the psychosomatic status of ski jumpers (MORPHOLOGY) have also shown a statistically significant contribution to the performance of ski jumpers (Mult R=.46; Rsq R=.21; Sig F=.00). On the basis of this realization we could accept the hypothesis that the morphological space is important for successful performance of ski jumpers. However, its manifest expression can only show over the variables of motor behavior. Their interaction effect on performance of ski jumpers may, of course, be significantly higher (Jošt 1989). The total mark of performance of ski jumpers in the space of motor variables (MOTORICS) was calculated as a linear combination of two hypothetical motor components based on the specific latent motor mechanisms. The first energy component of movement (ENERGY COMPONENT OF MOVEMENT) represents the total component of mechanisms, which within man’s motor abilities take care of the control, and regulation of energy processes. In addition to this component there is presumed, from the aspect of motor behavior, also the

existence of the information component of movement (INFORMATION COMPONENT OF MOVEMENT), which takes care of the co-ordinated action of those latent motor mechanisms that take care of the control and regulation of information processes. In ski jumping there is hypothesized that the both components have an equally important weight in the formation of the total motor regression function. This fact was also confirmed in this research as the both motor components have approximately the same coefficients of multiple correlations, as well as the elementary coefficients of correlation. The total mark of performance of ski jumpers which is indicated by the energy component of movement (ENERGY COMPONENT OF MOVEMENT) was statistically significantly correlated with the criterion of performance (Mult R=.52; Sig F=.00). Its manifestation is within the RPPM of ski jumpers subject to the linear summary of the mechanism for the regulation of excitation duration of the neuromuscular system (DURATION OF ENERGY) and the mechanism of intensity of excitation of the neuromuscular system (INTENSIVE OF ENERGY). For ski jumps there is more important the mechanism which within the motor potential of a ski jumper takes care of the intensity of energy processes (Sasaki et al. 1995) and their external physical explication in terms of the development of the largest possible force in the shortest possible or in optimal time (Virmvavirta and Komi 1994). The domination of this mechanism was also confirmed in the results of this research as the coefficient of multiple correlation in the variable INTENSIVE OF ENERGY (Mult R=.51; Rsq R=.26, Sig F=.00) was significantly higher than in the variable DURATION OF ENERGY which was on the phenomenological level represented by the repetitive strength (Mult R=.29; Rsq R=.08; Sig F=.13). Within the mechanism for the intensity of excitation of the neuromuscular system (INTEXC) all the three phenomenologically defined abilities showed balanced and statistically significant correlations with the criterion of performance of ski jumpers (SPEEDPOWER – Mult R=.49, Sig F=.00; EXPLOPOWER – Mult R=.40, Sig F=.02; ELASTICPOWER – r=.42, $p \leq .01$). The existence of a high degree of their intercorrelation (Table 2) resulted in three entirely different values of the Beta coefficients (SPEEDPOWER – Beta=0.57, Sig T=.10; EXPLOPOWER – Beta=0.13, Sig T=.44; ELASTICPOWER – Beta=-0.18, Sig T=.57) in the formation of the common regression function. On the basis of the obtained Beta values and a high degree of multiple correlation of the variable calculated by means of them, it is possible to state that within the field of strength, the speed strength is the most important for ski jumping; of course, at a satisfactory degree of the development level of explosive strength and elastic strength as well. The mechanisms that within man's motor abilities

regulate synergists and antagonists (REGULATION OF SYNERGIST MUSCLE) and the structuring of movement in the prescribed parameters of contents, space and time (COORDINATION) were, from the aspect of explained variance of the criterion of performance in ski jumping, approximately the same. A slightly higher value of the coefficient of multiple correlation was established in the mechanism taking care of the co-ordination of movement (Mult R=.51, Sig F=.00). Of course, the manifestation of the co-ordination abilities depends on the plasticity of the mechanism for the regulation of the synergistic and antagonistic muscle groups in which a slightly lower value of multiple correlation was established (Mult R=.48, Sig F=.01). Within the mechanism for the regulation of synergists and antagonists there occurred, at the phenomenological level, a domination of the ability of balance (Mult R=.45, Sig F=.00) in comparison with the ability of speed of alternative movements of the lower extremities (Mult R=.25, Sig F=.21) and the ability of flexibility (Mult R=.35, Sig F=.14). Irrespective of the obtained results of the stochastic analysis conducted on the concrete sample of ski jumpers, it is possible, for the prediction of their performance, to emphasize the essential condition of a high ability of balance and mobility. Similar applies to the ability of co-ordination of movement which was, for the requirements of this research, expressed by three variables indicating basically three typical forms of co-ordination. For all the three forms it is characteristic the requirement for the fastest possible execution of motor tasks that are complex in some way (as to contents or spatially). The highest degree of correlation ($r=.47$, $p\leq.01$) with the criterion of performance of ski jumpers showed the variable MFE10P. Concerned is a variable where the subject must jump over 10 obstacles at a prescribed height in the shortest possible time. The task requires that the subject has highly developed abilities for rhythmic mastering of movement wherein such movement is made difficult by certain hindrances or obstacles. Slightly lower coefficients of correlations could be established in the variables MKPOLN ($r=.43$, $p\leq.01$) and MKKROSP ($r=.38$, $p\leq.01$). Since there are concerned two opposite motor tasks, their motor independent content is certainly an important indicator of potential co-ordination ability of ski jumpers. The results of multiple correlation obtained in the space of morphological dimensions (MORPHOLOGY – Mult R=.46, Sig F=.00), after they were already transformed (according to the SPEX method) into the marks of predicted potential performance of ski jumpers, point to their statistically significant synergetic influence on the results of ski jumpers. Among the morphological variables, under which we understand the transformed values of the predicted potential performance of ski jumpers, the

highest correlation (r=.28) showed the body weight, which fact completely complies with the findings of some studies (Jošt 1989, Jošt et al. 1998). The contribution of the body weight (Beta=0.45, Sig T=.01) to the formation of the regression function at the node (BASICDIMENSIONS) was statistically significant and in comparison to the body height dominant. In the analysis of performance of ski jumpers we should not neglect the importance of morphological indexes, calculated on the basis of the anticipated functional relations to the physical environment in which ski jumps are realized. In this research there showed, at the limit of statistical significance, as significant the variable (TAKE-OFF) of the morphological index of the take-off of ski jumpers (r=-.24, Beta=-0,27, Sig T=.07). The mentioned index points to a relative relationship between the body weight and leg length. It is assumed that the ski jumpers with a higher relative leg length in comparison with the body height have poorer predispositions for successful take-off and transition into flight.

The results of regression analysis of correlation between the criterion variable of performance of ski jumpers (POINTS) and the derived psychological predictor variables of the RPPM after the completed transformation by means of the SPEX method are shown in Table 3. The psychological variables of the RPPM of ski jumpers were in a high multiple correlation (Mult R=.71). The value of the coefficient of multiple correlation (Rsq R=.51) confirms one of the hypotheses of this research that the psychological space is important for performance of ski jumpers since by means of multiple correlations half of the variance of the performance of ski jumpers was explained. The final performance of ski jumpers was evaluated by means of regression equation, which consisted of three predictors: special psychological capacities (PSYCHOLOGYCAPACITIES), motivation (MOTIVATION) and narrower personality traits (PERSONALTRAITS). With the criterion of performance there were significantly correlated the nodes which encompass the field of special psychological capacities (PSYCHOLOGYCAPACITIES) (Mult R=.53; Beta=0.47; Sig T=.00) and the space of personality traits (Mult R=.53; Beta=0.50; Sig T=.00). The area of motivation did not show statistically significant multiple correlation with the performance of ski jumpers. The manifestation of personality traits within the RPPM of ski jumpers was conditioned by the linear summary of the structural part of traits (STRUCTURETRAITS), social – psychological part of traits (SOCIALPSYCHOLOGICALTRAITS) and competition traits (COMPETITIVETRAITS). In ski jumping there showed, on the dealt with sample of ski jumpers, as statistically insignificantly correlated with the criterion of performance the structure traits (Mult R=.20; Rsq R=.04; Sig F=.38) and social-psychologi-

cal traits (Mult R=.14; Rsq R=.02; Sig F=.82), while the node of the linear tree of performance which covered the area of competitive traits (COMPETITIVETRAITS – Mult R=.52, Rsq R=.27, Sig F=.00) was statistically significantly correlated with the criterion of performance. The area of competitive traits on of ski jumpers was represented by the variables of anxiety, handling of a stress situation and perception of the competition situation. The variable of the emotional space which pointed to the manifestation of potential anxiety (ANXIETY) was statistically insignificantly correlated with the performance of ski jumpers (Mult R=.15; Rsq R=.02; Sig F=.60). This does not, of course, diminish the import of this variable since a high level of the anxiety trait can be an extremely disturbing personality factor in ski jumpers. From the researches carried out so far (Cratty 1989) it was possible to establish that anxiety has a negative effect on co-ordination. The answer why the correlation between anxiety and the criterion of performance is low can perhaps also be found in a pronouncedly selected population of ski jumpers from who almost all also work with a sports psychologist where they above all dedicate themselves to the reduction of anxiety. On the dealt with sample of ski jumpers there showed as a statistically significant competition property the variable of the perception of competition situation (PERCEPTIONOFSITUATION – Mult R=.40; Rsq R=0.16; Sig F=.05). For ski jumping it applies that the ski jumpers must overcome the stress situation as well as possible (STRESSCOPYING – Mult R=.38; Rsq R=0.14; Sig F=.08). This enables them a normal execution of the ski-jumping technique also under the most aggravated competition and weather conditions. In the formation of the regression function at the node of handling the stress situation the largest share contributed the variables of neuroticism (NEUROTICISM – r=.26, Beta=0.37, Sig T=.02) and calmness (CALMNESS – r=-.19, Beta=-0.25, Sig T=.09). Recommendable for ski jumpers is the maximal possible calmness, which can mean cheerfulness, optimism, avoidance of aggression and ability of fast decisions and actions and the smallest possible neuroticism since the latter reduces the ability of co-ordination in athletes. To the same outcomes came also Kurelić et al. (1979) and proved also the negative influence of the neuroticism on the balance. The competitors should also be able to evaluate the competition situation as realistically as possible and should above all not too highly perceive the importance of competition (IMPORTANCEOFCOMPETITION – r=-.32, Beta=-0.35, Sig T=.04) since too large a mobilization of energy in this direction can have just the opposite effect as desired; at the same time they should also be able to realistically evaluate others (PERCEPTIONOTHERS – r=-.17, Beta=0.24, Sig T=.09). Exaggerated acceptance of others can also mean

excessive dependence on certain persons, above all the coach, while too small acceptance on the other hand does not allow normal communication between the ski jumper and the coach. From the sign of the coefficient of correlation we could predict the largest possible independence of a competitor, which again can be against our expectations since realistic were the best possible cooperation and confidence in the coach. Within the area of special psychological capacities there were statistically significantly correlated with the criterion of performance of ski jumpers the variable indicating the capacity of the conductivity of the neurosystems or complex reaction (COMPLEXREACTIVITY – Mult R=.44, Rsq R=.19, Sig F=.01). The said variable was represented by the statistically significantly correlated variable of the speed of complex reaction time (COMPREACTIONTIMES – r=.44, Beta=.44, p≤.00) and the variable of stability of complex reaction (presented errors), (COMPREATIONERRORS – r=.05, Beta=0.03, p=.82) which was not statistically significantly connected with the performance of ski jumpers. The other two variables of the special psychological capacities of ski jumpers, intelligence, i.e. its perceptual-spatial factor (PERCEPTIVESPACIALFACTOR – (Mult R=.22; Rsq R=.05; Sig F=.36), and concentration (CONCENTRATION – Mult R=.31, Rsq R=.09, Sig F=.11) were statistically insignificantly correlated with the criterion of performance of ski jumpers.

Conclusions

By means of a representative sample which covered 50 best Slovene ski jumpers we could establish that by the model of reduced potential performance in the space of morphological-motor variables and psychological variables it was possible to explain more than a half (R=.76, Rsq R=.58, Sig F=.00) of the variance of performance of the ski jumpers covered by the sample. In the formulation of the common regression function, the psychological space (Beta=0.44; Sig T=.01) was slightly more important than the morphological-motor space (Beta=0.37; Sig T=.02). The variables of the reduced potential model of performance of ski jumpers (RPPM) also showed a statistically significant correlation with competition performance. Thus, within the morphological-motor space it was possible to explain with the selected variables 46% of performance variance (Mult R=.68, Rsq R=.46, Sig F=.00) and within the psychological space, 51% of the variance of performance (Mult R=.71, Rsq R=.51, Sig F=.00). The research has thus shown that for performance of ski jumpers there is of paramount importance a suitable degree of profiling of the morphological, motor and psychological variables of the psychosomatic status. This realization has its anthropolog-

ical theoretical and also a kinesiological applicative value for the development of the field of sports training. However, the study still leaves open many theoretical and methodological issues on the suitability of the applied methods of work. This issue will have to be solved in the future by new methodological approaches.

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Table 2. The results of regression analysis of the correlation between the criterion variable of performance of ski jumpers (POINTS) and predictor morphological-motor variables of the Reduced Performance Potential Model (RPPM) after the completed transformation by means of the SPEX method

	Mult R	r	Rsq R	Sig F	Beta	Sig T
POTENTIAL PERFORMANCE OF SKI JUMPING (RPPM)	.68	.57**	.46	.00		
├─**BASICS MORFOLOGY-MOTORICS SPACE**	.67	.53**	.45	.00	0,58	.00
│ ├─MOTORICS SPACE	.58	.55**	.34	.00	0,48	.00
│ │ ├─ENERGY COMPONENT OF MOVEMENT	.52	.50**	.27	.00	0,27	.11
│ │ │ ├─DURATION OF ENERGY EXCITATION	.29	.29*	.08	.13	0,10	.44
│ │ │ │ ├─*MMRNPK3*		.29*			0,27	.07
│ │ │ │ └─*MMRTDT45*		.12			0,04	.76
│ │ │ └─INTENSIVE OF ENERGY EXCITATION	.51	.49**	.26	.00	0,46	.00
│ │ │ │ SPEED-POWER	.49	.48**	.24	.00	0,57	.10
│ │ │ │ ├─*MMENSDM*		.47**			0,29	.17
│ │ │ │ └─*SMABAV0*		.46**			0,23	.28
│ │ │ │ EKSPLOSIV-POWER	.40	.40**	.16	.02	0,13	.44
│ │ │ │ ├─*EKSPL0*		.37**			0,22	.26
│ │ │ │ └─*EKSPLO1*		.37**			0,20	.30
│ │ │ └─ELASTIC-POWER						
│ │ │ └─*MMEN3SM*		.42**			-0,18	.57
│ │ └─INFORMATION COMPONENT OF MOVEMENT	.54	.52**	.30	.00	0,36	.03
│ │ │ REGULATION OF SYNERGIST MUSCLE	.48	.43**	.23	.01	0,24	.16
│ │ │ │ BALANCE	.45	.43**	.21	.00	0,35	.02
│ │ │ │ ├─*MRSAGIT*		.44**			0,51	.00
│ │ │ │ └─*MRFRONT*		.14			-0,12	.42
│ │ │ │ SPEED	.25	.09	.06	.21	0,06	.68
│ │ │ │ ├─*MHFNTD*		.01			-0,31	.18
│ │ │ │ └─*MHFNTL*		.17			0,42	.08
│ │ │ └─FLEXIBILITY	.35	.32*	.12	.14	0,16	.33
│ │ │ ├─*MGGTPK*		.26			-0,27	.46
│ │ │ ├─*MGGTPKR*		.33*			0,58	.12
│ │ │ └─*MGGOLS*		-.05			-0,00	.97
│ │ └─COORDINATION OF MOVEMENT	.51	.51**	.26	.00	0,35	.05
│ │ ├─*MFE10P*		.47**			0,26	.15
│ │ ├─*MKKROSP*		.38**			0,15	.34
│ │ └─*MKPOLN*		.43**			0,18	.30
│ └─MORPHOLOGY SPACE	.46	.06	.21	.00	0,35	.00
│ │ BASICS MORPHOLOGICAL DIMENSIONS	.36	.15	.13	.04	0,38	.00
│ │ ├─*BODY WEIGHT*		.28			0,45	.01
│ │ └─*BODY HEIGHT*		-.01			-0,28	.10
│ └─MORPHOLOGY INDEXES OF SKI JUMPING	.26	-.16	.07	.19	0,29	.03
│ ├─*FLIGHT INDEX*		-.03			-0,11	.45
│ └─*TAKE-OFF INDEX*		-.24			-0,27	.07
│ **SPECIAL MORPHOLOGIC MOTOR SPACE**	.51	.50**	.26	.00	0,14	.33
├─*MMISSK* - BASICS SKI JUMPING INDEX		.20			0,12	.35
├─SMISSKA - SPECIAL SKI JUMPING INDEX		.50**		.25	0,48	.00

** - p≤.05; ** - p≤.01*

Table 3. The results of regression analysis of correlation between the criterion variable of performance of ski jumpers (COMPETITIVE POINTS) and the psychological predictor variables of the Reduced Performance Potential Model (RPPM) after the completed transformation by means of the SPEX method

	Mult R	r	Rsq R	Sig F	Beta	Sig T
POTENTIAL PERFORMANCE (RPPM)	.71	.44**	.51	.00		
PSYCHOLOGY CAPACITIES	.53	.50**	.28	.00	0,47	.00
REACTIONTIMESOFNERVOUSSYST						
COMPLEXREACTIVITY	.44	.42**	.19	.01	0,47	.00
COMPREACTIONTIMES		.44**			0,44	.00
COMPREACTIONERRORS		.05			0,03	.82
INTELIGENCE						
PERCEPTIVESPATIALFACTOR	.22	.22	.05	.36	-0,09	.58
PERCEPTIVESPATIALREACTTIME		.21			0,18	.27
PERCEPTIVESPATIALREACTERROR		.14			0,08	.60
CONCENTRATION	.31	.31*	.09	.11	0,31	.04
QUANTITYACHIEVEMENT		.30*			0,25	.10
QUALITYACHIEVEMENT(ERRORS)		.20			0,11	.46
MOTIVATION	.33	.25	.10	.17	-0,05	.72
ACHIEVEMENTMOTIVATION	.24	.14	.05	.27	0,20	.17
POSITIVEACHMOTIVATION		.92			0,08	.56
NEGATIVEACHMOTIVATION		.22			0,22	.13
COMPETITIVEMOTIVATION	.23	.12	.05	.27	0,12	.47
POSITIVECOMPETITIVEMOTIV		.18			0,20	.18
NEGATIVECOMPETITIVEMOTIV		-.13			-0.15	.29
GOALORIENTATION	.21	.21	.04	.36	0,14	.37
EGOORIENTATION		.18			0,16	.30
TASKORIENTATION		.14			0,09	.53
PERSONALTRAITS	.53	.07	.28	.00	0,50	.00
STRUCTURETRAITS	.20	.14	.04	.38	-0,02	.86
MASKULINITY		.19			0,20	.25
NEGATTIVETRAITS	.11	.07	.01	.73	0,01	.93
DEPRESSION		.02			-0,04	.80
INHIBITIONANDSUPPRESSION		.11			0,13	.44
SOCIALPSYCHOLOGICALTRAITS	.14	.03	.02	.82	0,13	.31
DOMINANCE		-.12			-0,11	.45
SOCIABILITY		.03			-0,00	.97
EXTRAVERSION		.08			0,07	.65
COMPETITIVETRAITS	.52	.03	.27	.00	0,52	.00
ANXIETY	.15	.05	.02	.60	0,12	.35
TRAITANXIETY		-.01			-0,16	.43
PERFORMANCESTATEANXIETY		.09			0,21	.32
STRESSCOPYING	.38	.04	.14	.08	0,32	.02
EMOTIONALSTABILITY		.00			-0.08	.59
NEUROTICISM		.26			0,37	.02
CALMNESS		-.19			-0,25	.09
PERCEPTIONOFSITUATION	.40	-.21	.16	.05	0,30	.03
SELFCONFIDENCE		.20			-0,03	.82
IMPORTANCEOFCOMPETITION		-.32*			-0,35	.04
PERCEPTIONOTHERS	.23	-.17	.05	.29	0,24	.09
OPPONENTEVALUATION		.02			0,03	.79
OTHERSINFLUENCE		-.23			-0,23	.12

** - p≤.05; ** - p≤.01*