PREDICTIVE VALUE OF MOTOR ABILITIES ON THE RESULT IN CRITERIA VARIABLE SKI SHORT TURNS

Edin Mujanović[1], Radivoje Krsmanović[2]
[1]*Tuzla University, Faculty of Sport and Physical Education, Bosnia and Herzegovina*
[2]*University of East Sarajevo, Faculty of Physical Education, Bosnia and Herzegovina*

Original scientific paper

Summary
Set of tests of motor abilities (as the predictor system) was used on a sample of 81 students of the Faculty for physical education and sport in Tuzla, for the purpose of determining predictive value of motor abilities on the results in criteria variable ski short turns. By means of a regression analysis the whole system of predictor variables is statistical significant, so based on these results, occasionally it can be reacted, because of the growth of the same (motor abilities) on the optimal level, for the easier mastering of the elements of Alpine skiing techniques.

Key words: *regression analysis, alpine skiing, motor abilities, short turns, students*

INTRODUCTION

Alpine skiing is sport which takes place in different conditions of environment as well as field (bumps) and weather conditions of environment which are unpredictable for competitors (the wind, snow, fog). Due to all this, the skiers have to have memorized a huge number of different information so they could master better certain tasks which are given to them. Different sections of a track demand from skiers implementation of different techniques of skiing and its elements. In order to ski through all sections successfully, we have to know and overmaster the techniques of skiing as well as its elements. For successful and quality overmastering the specific skiing techniques, the optimal physical preparation of the skier is necessary as the postulate in all that. The efficient managing of the system is possible only if the structure of the system is known and its mutual relations which give us certain information for quality formation of postulates and foe successful management of elements of certain skiing techniques.Some of the authors that are occupied with issues of structure of motor dimensions are Kurelić, N. and his associates (1975)[3] where they speak of the factor of coordination, which embraces the area of agility. Metikoš, D., Hošek, A. (1972)[6] according to factor analyses, came to an assumption on existence of more complex structure of coordination, because the 10 latent dimensions of coordination are isolated. Explosive strength Kurelić, N. and his associates (1975) [3] have defined the explosive strength as the ability of short time maximal mobilization of muscular tissues, because of acceleration of body movement, which reflects in the movement of the body in the space of in effects on the objects around.Some of the authors that are occupied with issue of alpine skiing are Kazazović, E., Nurković, N. (2003)[2], where they research the objectivity of evaluation during overmastering the specific alpine skiing techniques, Mujanović, E. (2007)[7] who research in doctoral dissertation relations between anthropological dimensions and success in alpine skiing, Lilić, Lj. (2007)[5] in his paper research development of motor abilities at students during teaching process in alpine skiing.
The realization of performing the basic elements of alpine skiing depends on more factors of anthropologic areas. In this research, we set up for the aim the determination of predictive value of motor ability (24 variables), on the result in criteria variable ski short turns, so the students could master better the elements of alpine skiing.

METHODS

Participants

The participants in this research were consisted of regular students of the Faculty for physical education and sport in Tuzla, by the age of 21-23. The measurement procedure was done due to the sample of 81 student, who were regularly involved in the subject of skiing. All students from the sample were without expressed morphological,

motor and psychological aberration and were able to attend the classes regularly on third and fourth year of the University. All examinees were given base notations before the test started, towards carrying out the best quality of testing where the number of possible errors will be minimized.

Instruments

***The evaluation tests for motor abilities (predictor system*)**

For evaluation of motor abilities, the variables are chosen for which it is supposed that they cover the area of latent dimensions and energetic regulations, and are present in performance of basic elements of alpine skiing. The 24 variables were chosen for which it is supposed they cover the area of latent dimensions of motor abilities space.

These are the following tests:

For evaluation of balance factor, the following tests were used:

1. MBAP20 - standing on two legs broadside on the bench with opened eyes
2. MBAU20 - standing on two legs along the bench with opened eyes
3. MBAP10 - standing on one leg broadside on the bench with opened eyes
4. MBAU10- standing on one leg along the bench with opened eyes.

For the evaluation of flexibility factors, the following test will be used:

5. MFLISK - skew with a bat
6. MFLPRK - touch toe on the bench
7. MFLPRT - touch toe with a strip
8. MFLBOS - side split

For the evaluation of the speed of frequency of the movement, the following tests will be chosen:

9. MBFTAR - tapping with hand
10. MBFKRR - circulating with a hand
11. MBFTAN - tapping with foot
12. MBFTNZ - tapping with foot against the wall

For the evaluation of coordination factors, the following tests will be used:

13. MKOONT - agility on the ground
14. MKOOUZ - agility in the air
15. MAGOSS - eight with crouching
16. MAGKUS - steps aside

For the evaluation of explosive strength, the following tests will be used:

17. MESSDM - standing long jump test
18. MESSVM - vertical jump
19. MESBML - medicine ball toss
20. MFE20V - running 20 m/sprint

For the evaluation of repetitive strength, the following tests will be used:

21. MRSSKL - push-ups with load
22. MRSPTL - rising the body from the point of lying
23. MRSZTL - screening of the body in lying
24. MRSPCT - half- knee band with extra weight

Criteria variable

As the criteria in this research, the variable of SBRZVI - short turns was chosen, which is defined by curriculum of alpine skiing. The practical part of school skiing program consists of teaching of the elements of alpine skiing. The evaluation of success in performing elements of alpine skiing was done by the three judges. The judges had to fulfil the following conditions:

1. they had to have a degree University degree in Physical education and sport,

2. to own the theoretical and practical knowledge of alpine skiing.

The judges adjusted the criterion by paying special attention to initial position, body position, position of legs, arms, aesthetic performance of practice, coordination of performance of practice, amplitude of movement, speed and rhythm and final position. Evaluation of the teaching process was done by grades from 1-5. The skiing element is performed twice consideration possible mistakes and the judges are evaluated the better performance. Similar research results have got Kazazović, E., Nurković, N. (2003)[2], where they got metrical characteristics of tests, basic skiing elements, evaluated by judges and treat them like measuring instrument.

Metrical characteristics of tests SBRZVI- short turn

We defined metrical characteristics of tests SBRZVI- short turn using factor analysis principal components. In matrix of principal components

(table 1.) on the basis of presented data we see significant projections of vectors and we can tell that the grades for evaluation of skiing element SBRZVI- short turn were good criterion.

Table 1.

	Component 1
Judge 1	0,861
Judge 2	0,843
Judge 3	0,856

The methods of data processing

The information in this research were processed by program systems for multi variety analyses of information, by using the regressive analyses.

THE RESULTS AND DISCUSSION

The regression analyses of criteria variable in manifest area of motor variables, provides enough information on predictive value of manifest variables of motor abilities, used in this research on the result in criterion variable of short turns. By the predictor system of variables, the R Square (.527) was explained, i.e. 53% of common variability with criterion, while the connection of the whole system of variables with criteria R. 73 (table 2.) , which tells us that the whole system of predictor variables is significant for foreseeing the results on success in performance of the basic element of skiing technique, ski short turns. However, the other 47% in explaining the mutual variability can be prescribed to other dimensions of anthropologic status of a man, which are not taken in this research.

Table 2.

Summary Statistics; DV: SBRZVI	
	Value
Multiple R	0,726190
Multiple R²	0,527353
Adjusted R²	0,324789
F(24,56)	2,603398
p	0,001672
Std.Err. of Estimate	0,651062

By detailed overview of the table 3., we have analyzed the practical impact of the variables from the area of basic motor (the predictor set of variables), where we insighted that the seven variables have the statically significant influence and that is: from the area of variables for the evaluation of flexibility of the variable MFLPRT - tip toeing with string, MFLPRK -tip toeing on the bench, MFLISK -skew with a bat, and in the area of variables for evaluation of coordination MAGKUS- steps aside, from the area of variables for evaluation of repetitive strength the tests MRSSKL – push ups with weight, MRSPTL - rising the body from the position of lying and in the area of variables for evaluation of balance the test MBAP10 - standing on one leg broadside on the bench with opened eyes. Following that we can make conclusion that the motor dimensions of refer test are primary motor dimensions for successful execution of skiing element short turn. Anyhow we must considered that the whole system of predictor variables is significant for foreseeing the results on success in performance of the basic element of skiing technique, ski short turns, and the students with larger level of all applied motor abilities have more successes in overcoming the skiing elements.

Similar research results have got Lanc, V.(1984)[4] in his master work came up with conclusion that all motor abilities for evaluation of repetitive strength had large relations with test short turn and the test short turn had large relations with other skiing elements which had large relations with motor abilities for evaluation of balance and flexibility. Also in research paper Agrež, F. (1976)[1] got results that the skiers of quality level have good results in tests for evaluation of balance.

For successful performance of short turns, the practice coordination of basic skiing motion is necessary which controls the middle position of a skier on the ski, the control of the ski pressure on the basis as well as the movement of ski with correct (proper) semicircle. All this guides us on the fact that the short turns is very complex and specific motor task and for its successful performance are mostly responsible the above mentioned motor abilities of a man. Also, there is the irrefutable fact that for the mastering of its skiing element, the parallel development of all motor abilities used in this research are needed, because of the complexity of the system of skiing motion

Table 3.

Regression Summary for Dependent Variable: SBRZVI

	Beta	Std.Err. - of Beta	B	Std.Err. - of B	t(56)	p-level
Intercept			-7,75338	4,002261	-1,93725	0,057765
MBFTAR	0,133407	0,126963	0,03242	0,030850	1,05075	0,297886
MBFTAN	0,103512	0,141225	0,01186	0,016181	0,73296	0,466642
MBFTNZ	-0,049493	0,122816	-0,01492	0,037016	-0,40298	0,688497
MBFKRR	0,023221	0,153781	0,00339	0,022420	0,15100	0,880519
MFLBOS	0,242048	0,133855	0,01651	0,009131	1,80829	0,075932
MFLPRT	0,354017	0,144416	0,05774	0,023553	2,45137	0,017377
MFLPRK	0,422036	0,132797	0,05827	0,018335	3,17805	0,002414
MFLISK	-0,341808	0,153103	-0,01739	0,007787	-2,23253	0,029596
MKOONT	0,097085	0,118092	0,03806	0,046294	0,82212	0,414498
MKOOUZ	-0,153679	0,118657	-0,31006	0,239397	-1,29515	0,200582
MAGOSS	0,135457	0,138604	0,12728	0,130238	0,97729	0,332627
MAGKUS	0,423413	0,167261	0,52555	0,207609	2,53146	0,014193
MESSVM	0,245154	0,160760	0,03015	0,019770	1,52497	0,132895
MESSDM	0,015235	0,166584	0,00068	0,007461	0,09146	0,927455
MESBML	-0,205279	0,141258	-0,01078	0,007420	-1,45322	0,151742
MFE20V	-0,101727	0,134252	-0,44311	0,584787	-0,75773	0,451789
MRSSKL	0,297093	0,121622	0,03434	0,014056	2,44276	0,017756
MRSPTL	0,247738	0,113071	0,03730	0,017026	2,19100	0,032630
MRSZTL	0,030858	0,116651	0,00319	0,012069	0,26453	0,792340
MRSPCT	-0,102940	0,129927	-0,00650	0,008205	-0,79229	0,431534
MBAP20	-0,110157	0,117513	-0,03989	0,042554	-0,93741	0,352575
MBAU20	0,140489	0,122403	0,05341	0,046530	1,14776	0,255948
MBAP10	0,238290	0,113852	0,05555	0,026542	2,09299	0,040893
MBAU10	0,149446	0,108347	0,00747	0,005415	1,37933	0,173278

CONCLUSION

The testing of motor abilities, students, pupils, skiers, have very important role in the frame of program performing and mastering the elements of alpine ski school. Based on these results, occasionally it can be reacted because of the growth of the same (motor abilities) on the optimal level, for the easier mastering of the elements of alpine skiing techniques. We can say that in the base itself, the physical preparations, which is the postulate for technically correct performing of skiing elements.

These results indicate on necessity of practicing of further researches on the population of students and multidimensional over viewing the given problem in the purpose of improvement of educational process of ski learning.

REFERENCES

1. Agrež, F. (1976). *Povezanost motoričkih i morfoloških dimenzija sa uspješnosti u alpskom skijanju*. Visoka šola za telesno kulturo, Ljubljana.
2. Kazazović, E., Nurković, N. (2003). *Analiza objektivnosti ocjenjivanja kod izvođenja osnovnih elemenata alpskog skijanja*. Sportski logos. Godina 1. broj 2. Str.88-92.
3. Kurelić, N., Momirović, K., Stojanović, M., Šturm, J., Radojević, Đ., Viskić-Štalec, N. (1975). *Struktura i razvoj morfoloških i motoričkih dimenzija omladine*. Institut za naučna istraživanja Fakulteta za fizičko vaspitanje Univerziteta u Beogradu

4. Lanc, V.(1984). *Utjecaj primarnih motoričkih faktora na uspjeh u učenju tehnike elemenata alpske škole skijanja*. Magistarski rad. Fakultet za fizičku kulturu Sveučilišta u Zagrebu
5. Lilić, Lj. (2007). *Razvoj nekih motoričkih sposobnosti kod studenata nakon desetodnevne nastave smučanja*. Sport Mont časopis broj 12, 13, 14 / V. Str.721-724 Podgorica
6. Metikoš, D., Hošek, A. (1972*). Faktorska struktura nekih testova koordinacije.* Kineziologija, (II),
7. Mujanović, E. (2007). *Uticaj antropoloških dimenzija na uspjeh u alpskom smučanju*, Doktorska disertacija, Fakultet fizičke kulture Univerziteta u Istočnom Sarajevu,

PREDIKTIVNA VRIJEDNOST MOTORIČKIH SPOSOBNOSTI NA REZULTAT U KRITERIJSKOJ VARIJABLI BRZO VIJUGANJE

Originalni naučni rad

Sažetak
Set varijabli motoričkih sposobnosti (kao prediktorski sistem) je korišten na uzorku od 81 ispitanika studenata III godine Fakulteta za tjelesni odgoj i sport u Tuzli, u svrhu određivanja prediktivne vrijednosti motoričkih sposobnosti na kriterijsku varijablu brzo vijuganje. Regresionom analizom utvrđena je statistički značajna vrijednost prediktorskog sistema na kriterij te se na temelju tih rezultata pravovremeno može reagirati, radi povećanja istih (motoričkih sposobnosti) na optimalan nivo radi lakšeg savladavanja elemenata tehnike alpskog skijanja.

Ključne riječi: regresiona analiza, alpsko skijanje, motoričke sposobnosti, studenti

Correspondence to:

Edin Mujanović
Tuzla University,
Faculty of Physical Education and Sport
2. Oktobra 1, 75 000 Tuzla, Bosnia and Herzegovina
Phone: +387 35 278 535
E-mail: edin.mujanovic@untz.ba