Selektivna baterija motoričkih testova atletske discipline skok udalj

The Selective Battery of Motor Tests For a Track and Field Event Long Jump

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Sažetak: Osnovni cilj ove studije je bio identifikacija selektivne baterija motoričkih testova za skok udalj. Na taj način bi se u budućnosti omogućilo trenerima da na jednostavniji način određuju takmičarske potencijale, kao i da preciznije usmjeravaju organizaciju trenažnog procesa.

Uzorak ispitanika za ovu studiju je bio sačinjen od 1200 dječaka osnovnih i srednjih škola. Osnovni uzorak je bio podijeljen na osam subuzoraka od po 150 dječaka od petog razreda osnovne škole (11 godina ± 6 mjeseci) do četvrtog razreda srednje škole (18 godina ± 6 mjeseci). Polje motoričkih pokazatelja iz kojeg je trebalo odrediti selektivnu bateriju je bio strukturiran od pokazatelja onih motoričkih sposobnosti, koje su presudne za kvalitetan rezultat u skoku udalj (brzina, eksplozivna snaga gornjih ekstremiteta, eksplozivna snaga donjih ekstremiteta i gipkost).

Ovim istraživanjem je utvrđeno da najveći nivo selektivnog kvaliteta imaju testovi za procjenu eksplozivne snage donjih ekstremiteta horizontalnog tipa: skok uvis s mjesta i troskok s mjesta, testovi za procjenu brzine trčanja: trčanje 20 metara leteći start i trčanje 30 metara visoki start, kao i test za procjenu eksplozivne snage gornjih ekstremiteta, bacanje medicinke iz ležanja. To su testovi koji se moraju naći u svakoj bateriji testova, koja za cilj ima selekciju mladih atletičara za skok udalj.

Ključne riječi: atletika, skok udalj, predikcija, selekcija.

Abstract: The basic goal of this study was identification of the selection battery of motor tests for long jump. In this way, coaches would be enabled in the future to determine their competitive potentials more simply, and to direct the organization of a training process more precisely.

The sample of the examinees for this research composed of 1200 boys from primary and secondary schools. The basic sample was divided into eight subsamples with 150 boys from the fifth class of primary school (12 years ± 6 months) to the fourth class of secondary school (18 years ± 6 months). The area of the motor indicators, on the basis of which it should be determined the selection battery, was structured from the indicators of those motor abilities, that were decisive for the quality result in long jump (speed, explosive strength of upper extremities, explosive strength of lower extremities and flexibility).

This research proved that the biggest level of selective quality, is related to the tests for the estimation of explosive strength of lower extremities: vertical jump test and standing triple jump, tests for the estimation of running speed: running 20 m flying start and running 30 m standing start, and test for the estimation of explosive strength of upper extremities, lying medicine ball throw. These are tests which must be in each battery of tests which, as an aim, have the talent identification of young jumpers for long jump.

Key words: track and field, long jump, selection.

Uvod

U atletici postoje četiri skakačke discipline, skok udalj, troskok, skok uvis i skok motkom. Skokovi su kretne strukture koje prema svojem karakteru spadaju u osnovna biotička motorička znanja. Predstavljaju kretanje koje se zasniva na prelazu tijela iz položaja opiranja o čvrstu podlogu u bespotporni položaj posredstvom produkcije sila vlastitim mišićima. Prema osnovnoj definiciji skakanja, odnosno skokova, samo dvije atletske

Introduction

There are four jumping disciplines in athletics, long jump, triple jump, high jump and pole vault. Jumps are movement structures which belong to the basic biotic motor skills by their own character. They represent a movement based on the body transition from the position of resistance to a solid foundation into a resistance-free position through the production of forces by its own muscles. According to a basic definition of jump, namely jumping only two track and field events entirely fulfill the set prin-

skakačke discipline u potpunosti ispunjavaju postavljene principe. To su skok udalj i skok uvis, dok su troskok i skok motkom modifikovani oblici skakanja u kojem se jedan skok ponavlja više puta, a kod skoka motkom koristi se i motka kao vanjsko tijelo.

Atletski skokovi su veoma složena kretanja sačinjena od segmenta zaleta koji predstavlja ciklično kretanje i segmenta leta koji je aciklično kretanje. Kod svih atletskih skokova podizanje tijela u fazi leta se postiže pomoću zaleta i odraza i upravo od načina zaleta i njegovog jedinstva sa odrazom let u svakoj od disciplina dobija svoj karakter. Kod skoka motkom, zaletu i odrazu je neophodna i motka kako bi karakter te discipline bio potpun.

Prema svojim osnovnim karakteristikama sve četiri atletske discipline se dijele u dvije grupe: horizontalni ili daljinski skokovi (skok udalj i troskok), gdje atletičar i atletičarka imaju zadatak postići što veću daljinu svoga skoka i vertikalni ili visinski skokovi (skok uvis i skok motkom), gdje atletičari imaju zadatak postići što veću visinu svoga skoka.

Od sve četiri skakačke discipline koje su danas u atletskom programu, skok udalj je najstarija, a ujedno spada i u najstarije atletske discipline uopšte. Na antičkim Olimpijskim igrama skok udalj je bio u sastavu pentatlona-petoboja. Za razvoj skoka udalj posebno je bitna 1896. godina kada se u upotrebu uvodi odrazna daska, koja će omogućiti veliki napredak u rezultatima.

Analizirajući biomehaničke karakteristike, skok udalj spada u grupu složenih prostornih gibanja, a po tipu motoričke aktivnosti u grupu prirodnih kretanja bez korišćenja tehničkih pomagala. Struktura cjelokupnog kretanja discipline skok udalj se dijeli na ciklični dio (zalet) i aciklični dio (skok), koji se dijeli na tri segmenta: odraz, let i doskok. Na kvalitet rezultata od mehaničkih faktora, najznačajnije utiču brzina zaleta, intenzitet odraznog impulsa i ugao odraza (Idrizović, 2010).

Veliki broj naučnih istraživanja u okviru discipline skoka udalj ukazuju da on predstavlja disciplinu kod koje globalno posmatrajući, na rezultat, najviše utiču funkcionalno-motorička svojstva skakača, i to brzina i snaga najviše. Ove dvije motoričke sposobnosti, odnosno njihova sinergija, determiniše skakački kvalitet. Razvijanje ovih sposobnosti je, pored visokog nivoa njihove genetske predisponiranosti, stvar koja se tiče dugogodišnjeg trenažnog procesa.

Stručnjacima u oblasti fizičke kulture podaci o brzinsko-kontrakcionim svojstvima mišića nogu mogu da služe za izbor sportske orijentacije, za testiranje funkcionalnog stanja nervno-mišićnog aparata i za rukovođenje treningom prema unaprijed zadatom cilju, što znači da

ciples. These are long jump and high jump, while triple jump and pole vault are modified shapes of jumping where one jump is repeated several times, and in a pole vault a pole is used as an external body.

The track and field jumps are very complex movements made of segments of approach representing a cyclic movement and segments of a flying which is acyclic movement. For all track and field jumps, the hoisting of a body in the flying phase is accomplished by an approach and a takeoff and just on the way of approach and its unity with takeoff, flying in all discipline obtains its character. For the pole vault, an approach and takeoff demand a pole in order to fulfill the entire character of this discipline.

According to its basic characteristics, all four disciplines are divided into two groups; horizontal or distance jumps (long jump and triple jump), where male and female athletes have a task to obtain the biggest possible length of their jumps, and vertical or height jumps (high jump and pole vault), where athletes have a task to obtain the biggest possible height of their jumps.

Of all four athletic disciplines which are today present in an athletic program, a standing jump is the oldest and it also belongs to the oldest disciplines in total. At the antique Olympic Games, a long jump was in the framework of a pentathlon. The year 1896 is especially important for the development of a long jump when a takeoff board which enabled a great advancement in results was introduced.

Analyzing biomechanical characteristics, one can see that a long jump belongs to the group of spatially complex motion, and by a type of motor activity in the group of natural movements without the use of technical tools. The structure of entire movement in a standing jump is divided into a cyclic part (approach) and acyclic part (jump), which is divided into three elements: takeoff, flying and landing. The speed of approach, the intensity of takeoff impulse and the angle of takeoff most importantly influence the quality of results of all motor factors (Idrizovic, 2010).

A plenty of scientific researches within the discipline of a long jump indicate that it represents a discipline in which, globally seeing, functionally-motor traits of a jumper influence the results, and where a speed and strength have the biggest impact. These two motor abilities, namely their synergy, determine a jumping quality. The development of these abilities is, beside the high level of their genetic predisposition, the thing which is related to a multiannual training process.

The experts from the area of physical culture use the data about the speed-contractive traits of leg muscles which can serve for the choice of sport orientation, for the testing of a functional condition of neural-muscle

tamo gdje brzinska svojstva mišića mogu da utiču na postizanje određene brzine u kretanju čovječijeg tijela ili djelova tijela (sprint, skokovi i sl.) (Nićín, 1977).

Upravo sportska orijentacija i usmjeravanje (identifikacija talenata) predstavlja jedan od najznačajnijih zadataka budućeg razvoja atletske discipline skok udalj.

Veliki broj autora ističe bazične motoričke i morfološke pokazatelje u selekciji talenata za individualne sportove kakav je atletika (Aule i Loko, 1982; Schroter i Voss, 1990; Johnes, 1989, 1993 i 1997; Henson i sar. 1993; Suslov i Kulakov, 2004).

Siris (1982) opisuje dva nivoa programa za identifikaciju talenata u skoku udalj. On sugeriše da su najvažniji faktori uspješnosti u skoku udalj brzina i sposobnost ubrzanja. U prvoj fazi se mladi atletičari, koji imaju bolje rezultate od prosječnih u seriji testova, i koji imaju odgovarajuće antropometrijske mjere, selektiraju za specifični trenažni program. Kao zaključak osamnaestomjesečnog trenažnog programa se smatra druga faza selekcije kada se biraju pojedinci sa prihvatljivim napretkom.

Jarver (1983) prezentuje generalnu bateriju testova koju su koristile Sovjetske sportske škole za selekciju skakača. Ta baterija je uključivala testove 30m i 60m sprint, skok udalj s mjesta, troskok s mjesta, zgibovi i sklekovi.

Da sve nije nimalo jednostavno naglašavaju Werner i Emrich (1997), koji ističu da se u znatnom broju atletskih klubova, proces selekcije budućih vrhunskih atletičara dešava sasvim slučajno, jer jedan, dosta veliki broj trenera, smatra da talentovani pojedinci uvijek pronalaze put do uspjeha.

Sa druge strane, postavlja se veoma značajno pitanje, koji su to testovi, kojima se procjenjuju najbitnija funkcionalno-motorička svojstva (brzina, eksplozivna snaga) za skok udalj, a čiji rezultati najbolje mogu predvidjeti individualni potencijal za ovu disciplinu.

Sve prethodno navedeno je uticalo na postavljanje osnovnog cilja ovog istraživanja, koji je definisan kao utvrđivanje prediktivno-selektivne baterije testova za atletsku disciplinu skok udalj.

Metod rada

Uzorak ispitanika za ovo istraživanje je bio sačinjen od 1200 učenika osnovnih i srednjih škola. Osnovni uzorak je bio podijeljen na osam subuzoraka od po 150 učenika petog razreda osnovne škole (dob: 11 godina ± 6 mjeseci; visina: 150,18cm ± 6,87; masa: 41,75kg ± 7,62), 150 učenika šestog razreda osnovne škole (dob: 12 godina ± 6 mjeseci; visina: 157,20cm ± 8,63; masa: 48,68kg ± 10,68), 150 učenika sedmog razreda osnovne

system and for the training management according to previous determined set goals, what means that the speed traits of muscle can impact on the achievement of a particular speed in the human body movement or body parts (sprint, jumps, etc) (Nicin, 1977).

Athletic orientation and directing (identification of talents) actually represents one of the most important tasks of future development of a track and field discipline of a long jump.

Many authors highlight the basic motor and morphological tests in the selections of talents for the individual sports as track and field is (Aule and Loko, 1982; Shroter and Voss; 1990, Johnes 1989, 1993 and 1997; Henson et al., 1993; Suslov and Kulakov, 2004).

Siris (1982) describes two levels of programs for the identification of talents in a long jump. He suggests that the most important factors of successfulness in a long jump are the speed and ability of acceleration. In the first phase, young athletes having the results better than average in a series of tests, and those having the corresponding anthropometric measures, are chosen for a specific training program. The second phase of selection, when individuals with acceptable advancement are chosen, is considered to be a conclusion of an 18-month-long training program.

Jarver (1983) presents the general battery of tests used in Soviet sport school for the selection of jumpers. This battery used tests are 30 m and 60 m sprint, standing long jump, standing triple jump, pull-ups and push-ups.

This is not simple at all, as proven by Werner and Emrich (1997) who highlight that, for given number of track and field clubs, the process of selection of future top athletes occurs quite randomly, because a fairly big number of coaches considers that talented individuals always find their paths to success.

On the other side, the important question emerges, which tests are those by which most important functional motor abilities are estimated (speed, explosive strength) for a long jump, and whose results can best predict an individual potential for this discipline.

All the previously mentioned influence represent the setting of basic part of this research, which is defined as the determining of a selective battery of tests for an track and field event long jump.

Methods

The sample for this research consisted of 1200 boys of primary and secondary schools. The basic sample was divided into eight subsamples of 150 boys of the fifth class of primary school. (age: 11 years ± 6 months; height: 150,18cm ± 6,87; mass: 41,75kg ± 7,62), 150 boys of the sixth class of

škole (dob: 13 godina ± 6 mjeseci; visina: 163,70cm ± 8,41; masa: 54,70kg ± 12,07), 150 učenika osmog razreda osnovne škole (dob: 14 godina ± 6 mjeseci; visina: 171,00cm ± 7,83; masa: 57,80kg ± 9,38), 150 učenika prvog razreda srednje škole (dob: 15 godina ± 6 mjeseci; visina: 174,60cm ± 7,84; masa: 65,80kg ± 11,82), 150 učenika drugog razreda srednje škole (dob: 16 godina ± 6 mjeseci; visina: 179,00cm ± 7,70; masa: 70,50kg ± 12,69), 150 učenika trećeg razreda srednje škole (dob: 17 godina ± 6 mjeseci; visina: 184,44cm ± 6,26; masa: 77,94kg ± 13,02) i 150 učenika četvrtog razreda srednje škole (dob: 18 godina ± 6 mjeseci; visina: 183,97cm ± 5,69; masa: 76,81kg ± 10,14).

Prostor motoričkih pokazatelja iz kojeg je trebalo definisati prediktivno-selektivnu bateriju testova je bio strukturiran od pokazatelja onih motoričkih sposobnosti, koje su presudne za kvalitetan rezultat u atletskoj disciplini skok udalj (brzina, eksplozivna snaga ruku i ramenog pojasa, eksplozivna snaga donjih ekstremiteta i gipkost).

Za procjenu brzinskih sposobnosti primijenjeni su testovi: taping rukom (MBTAPR), trčanje 20m leteći start (TRČ20), trčanje 30m visoki start (TRČ30).

Za procjenu eksplozivno-snažnih sposobnosti ruku i ramenog pojasa i donjih ekstremiteta su primijenjeni testovi: bacanje medicinke iz sjeda (MFEBMS), bacanje medicinke iz ležanja (MFEBML), bacanje medicinke nazad preko glave (MFEBMN), skok udalj iz mjesta (MFEDM), troskok iz mjesta (MFETM), skok uvis s mjesta-Sargent (MFEVM).

Za procjenu gipkosti pojedinih djelova tijela su primijenjeni sljedeći testovi: iskret sa palicom (MISK), duboki pretklon na klupici (MDPK), špagat (MSPA).

Kriterijumski motorički test u ovom istraživanju je bio atletska disciplina skok udalj (MFFEDZ).

Svaka od manifestnih varijabli motoričkih sposobnosti bila je mjerena tri puta, a da bi se dobio što precizniji rezultat za svaki pojedinačni entitet, konačna vrijednost testa je bila izračunata kao prosječna vrijednost sva tri mjerenja.

Testiranje je realizovano u tri odvojena dana. Prvog dana su sprovedeni testovi za procjenu brzinskih potencijala i eksplozivne snage ruku i ramenog pojasa. Drugog dana su realizovani testovi za procjenu eksplozivne snage donjih ekstremiteta i gipkosti, dok je trećeg dana sproveden kriterijumski test skok udalj.

Cjelokupna statistička procedura je sprovedena korišćenjem SPSS paketa verzija 21.0. Regresionom analizom je izračunat uticaj prediktorskih varijabli na

primary school (age: 12 years ± 6 months; height: 157,20cm ± 8,63; mass: 48,68kg ± 10,68), 150 boys of the seventh class of primary school (age: 13 years ± 6 months; height: 163,70cm ± 8,41; mass: 54,70kg ± 12,07), 150 boys of the eight class of primary school (age: 14 years ± 6 months; height: 171,00cm ± 7,83; mass: 57,80kg ± 9,38), 150 boys of the first class of secondary school (age: 15 years ± 6 ; months; height: 174,60cm ± 7,84; mass: 65,80kg ± 11,82), 150 boys of the second class of secondary school (age: 16 years ± 6 months; height: 179,00cm ± 7,70; mass: 70,50kg ± 12,69), 150 boys of the third class of secondary schools (age: 17 years ± 6 months; height: 184,44cm ± 6,26; mass: 77,94kg ± 13,02) and 150 boys of the fourth class of secondary school (age: 18 years ± 6 months; height: 183,97cm ± 5,69; mass: 76,81kg ± 10,14).

The area of motor indicators, from which the selection battery of tests should be created, consisted of the indicators of those motor abilities that were decisive for a quality result in a track and field event of a long jump (speed, explosive strength of upper extremities, explosive strength of lower extremities and flexibility).

The tests: hand taping (MBTAPR), running 20m flying start (TRC20), running 30m standing start (TRC30) were applied for the estimation of speed abilities.

The tests: medical ball throwing from sitting position (MFEMBS), medical ball throwing from lying position (MFEBML), medical ball throwing backward overhead (MFEBMN), standing long jump (MFEDM), standing triple jump (MFETM), vertical jump test (Sargent) (MDPK), were applied for the estimation of the explosive strength of upper extremities and explosive strength of lower extremities.

The following tests; side bend with a stick (MISK), deep forward bend on a bench (MDPK) and spagat (MSPA) were applied for the estimation of the suppleness of some body parts.

The criterion motor test in this research was a track and field event long jump (SKD).

Each of manifest variables of motor abilities was measured three times, and, in order to get the results for each individual entity as precise as possible, the final value was calculated as an average value of all three measurements.

The testing was carried out during three separated days. The tests for the estimation of speed potentials and explosive strength of upper extremities were carried out during the first day. The tests for the estimation of explosive strength of lower extremities and flexibility were carried out during the second day while the criterion test of long jump was carried out during the third day.

The total statistical procedure was carried out using the SPSS packet version 21.0. The impact of predictor variables

kriterijumom. Statistička značajnost je određena na nivou p<0.05.

Rezultati

U tabeli 1 su dati rezultati regresione analize za uzrast jedanaestogodišnjih dječaka. Zajednički varijabilitet prediktorskog sistema varijabli i kriterijumskog testa je 41%, što označava da ovakav prediktorski sitem objašnjava u ovom uzrastu toliki nivo ukupne varijanse kriterijuma. Statistički značajan uticaj su ostvarili testovi trčanje na 20 metara iz letećeg starta i skok uvis s mjesta.

on the criteria was calculated by the regression analysis. The statistical significance was determined at the level of p<0.05.

Results

Table 1 gives the results of the regression analysis for the eleven-year-old boys. The common variability of a predictor system and criterion test is 41%, which means that such a system explains the level of the total criterion variance at this age. The statistically significant impact was attained by tests 20 m running from flying start and vertical jump test.

Tabela 1. Regresiona analiza varijable SKD (V razred osnovne škole)

DELTA=.41 RO=.64 Q=.00

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ20	-.44	-.18	-.20	9.34	.03
TRČ30	-.40	-.06	-.07	2.92	.44
MFEBMS	.25	.11	.11	3.03	.19
MFEBML	.21	-.00	-.00	0.17	.92
MFEBMN	.26	.05	.05	1.36	.51
MFEDM	.43	.00	.00	0.25	.94
MFETM	.47	.13	.14	6.84	.10
MFEVM	.51	.28	.29	15.16	.00
MBTAPR	.24	.10	.09	2.18	.20
MISK	-.08	-.07	-.05	0.49	.40
MDPK	.11	.04	.03	0.44	.60
MSPA	.11	-.01	-.01	0.20	.81

Table 1. Multiple Regression Analysis (V class of primary school)

Rezultati regresione analize za uzrast dvanaestogodišnjih dječaka dati su u tabeli 2. Zajednički varijabilitet prediktorskog sistema varijabli i kriterijumskog testa je 66%. Statistički značajan uticaj su ostvarili testovi trčanje 20 metara leteći start, troskok s mjesta i motorički test taping rukom.

The results of the regression analysis for 12-year-old boys are given in Table 2. The common variability of a predictor system and criterion test is 66%. The statistically significant impact was attained by the following tests: running 20 m flying start, standing triple jump and a motor test hand tapping.

Tabela 2. Regresiona analiza varijable MFEDZ (VI razred osnovne škole)

DELTA=.66 RO=.82 Q=.00

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ20	-.49	-.21	-.16	7.84	.01
TRČ30	-.52	-.10	-.08	4.16	.24
MFEBMS	.28	-.08	-.08	2.24	.34
MFEBML	.19	-.11	-.11	2.09	.16
MFEBMN	.32	.08	.09	2.88	.32
MFEDM	.66	.15	.17	11.22	.08
MFETM	.74	.43	.44	32.56	.00
MFEVM	.60	.03	.03	1.80	.75
MBTAPR	.41	.22	.15	6.15	.00
MISK	-.03	-.04	-.02	.06	.65
MDPK	.13	-.03	-.02	.26	.68
MSPA	.31	.19	.13	4.03	.02

Table 2. Multiple Regression Analysis (VI class of primary school)

DELTA=.66 RO=.82 Q=.00

Rezultati regresione analize za uzrast trinaestogodišnjih dječaka dati su u tabeli 3. U ovom uzrastu ovakav

The results of the regression analysis for 13-year-old boys are given in Table 3. At this age, such a predic-

prediktorski sitem motoričkih varijabli determiniše 64% ukupne varijanse kriterijuma. Statistički značajan uticaj su ostvarili testovi trčanje 20 metara leteći start, trčanje 30 metara visoki start i troskok s mjesta, dok je na granici statističke značajnosti utvrđen uticaj testa skok uvis s mjesta.

tor system of motor variables determines 64% of the total criterion variance. The statistically important impact was attained by the tests: running 20 m flying start, running 30m standing start and standing triple jump, while the impact of a vertical jump test was determined at the verge of a statistical significance.

Tabela 3. Regresiona analiza varijable MFEDZ (VII razred osnovne škole)

Table 3. Multiple Regression Analysis (VII class of primary school)

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ 20	-.66	-.11	-.20	13.26	.03
TRČ 30	-.64	-.16	-.18	11.59	.04
MFEBMS	.34	-.05	-.05	2.04	.53
MFEBML	.36	-.05	-.06	2.38	.48
MFEBMN	.45	.15	.15	7.14	.07
MFEDM	.64	.12	.13	8.92	.14
MFETM	.68	.26	.24	16.78	.00
MFEVM	.67	.16	.18	12.73	.05
MBTAPR	.20	-.11	-.07	1.59	.18
MISK	-.08	.00	.00	0.01	.96
MDPK	.16	-.14	-.09	1.58	.09
MSPA	.29	.08	.05	1.69	.33

DELTA=.64 RO=.80 Q=.00

DELTA=.64 RO=.80 Q=.00

U tabeli 4 su dati rezultati regresione analize za uzrast četrnaestogodišnjih dječaka. Zajednički varijabilitet prediktorskog sistema varijabli i kreiterijumskog testa je 56%, što označava primijenjeni prediktorski sitem objašnjava u ovom uzrastu toliko polje ukupne varijanse atletske discipline skok udalj. Statistički značajan uticaj na rezultate u atletskoj disciplini skok udalj pojedinačno, ostvarili su testovi troskok s mjesta, skok uvis s mjesta i duboki pretklon na klupici.

Table 4 gives the results of the regression analysis for 14-year-old boys. The common variability of a predictor system and criterion test is 56%, which means that the applied predictor system explains at this age such a field of total variance of track and field discipline long jump. The statistically significant impact on the results in a track and field discipline long jump, individually, was attained by tests: standing triple jump, vertical jump test and a deep forward bend on a bench.

Tabela 4. Regresiona analiza varijable MFEDZ (VIII razred osnovne škole)

Table 4. Multiple Regression Analysis (VIII class of primary school)

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ 20	-.52	-.11	-.11	6.18	.19
TRČ 30	-.45	-.09	-.09	4.14	.29
MFEBMS	.44	.00	.01	0.48	.91
MFEBML	.36	-.11	-.13	4.80	.19
MFEBMN	.52	.12	.16	8.46	.13
MFEDM	.61	-.08	-.12	7.78	.31
MFETM	.63	.20	.22	13.97	.01
MFEVM	.65	.30	.42	28.07	.00
MBTAPR	.34	-.04	-.03	1.26	.60
MISK	-.08	-.04	-.02	0.24	.63
MDPK	.30	.22	.16	4.99	.00
MSPA	.37	.12	.10	3.97	.13

DELTA=.56 RO=.75 Q=.00

DELTA=.56 RO=.75 Q=.00

Rezultati regresione analize atletske discipline skok udalj u motoričkom prostoru, za uzrast petnaestogodišnjih dječaka, dati su u tabeli 5. Zajednički varijabilitet prediktorskog sistema varijabli i kriterijumskog testa je 64%. Statistički značajan uticaj su ostvarili testovi trča-

The results of the regression analysis of track and field event long jump in a motor area, for the 15-year-old boys, are given in Table 5. The common variability of a predictor system of variables and criterion tests is 64%. The statistically significant impact was obtained by

nje 20 metara leteći start, trčanje 30 metara visoki start, troskok s mjesta i skok uvis s mjesta.

the tests: running 20m flying start, running 30m standing start, standing triple jump and vertical jump test.

Tabela 5. Regresiona analiza varijable MFEDZ (I razred srednje škole)

Table 5. Multiple Regression Analysis (I class of secondary school)

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ 20	-.60	-.17	-.23	13.80	.04
TRČ 30	-.69	-.21	-.29	20.01	.01
MFEBMS	.44	-.04	-.03	1.32	.62
MFEBML	.42	-.03	-.02	0.84	.70
MFEBMN	.43	.12	.10	4.30	.13
MFEDM	.61	.08	.10	6.10	.33
MFETM	.48	-.16	-.16	7.68	.04
MFEVM	.66	.41	.46	30.36	.00
MBTAPR	.42	-.06	-.06	2.52	.45
MISK	-.23	-.09	-.06	1.38	.28
MDPK	.24	.03	.02	0.48	.67
MSPA	.28	-.09	-.07	1.96	.75

DELTA=.64 RO=.80 Q=.00

DELTA=.64 RO=.80 Q=.00

Zajednički varijabilitet prediktorskog sistema varijabli i kriterijumskog testa za uzorak šesnaestogodišnjih dječaka je 67%, što označava da ovakav prediktorski sistem objašnjava u ovom uzrastu veoma visok nivo ukupne varijanse kriterijuma (tabela 6). Statistički značajan uticaj su ostvarili testovi trčanje 30 metara visoki start i skok uvis s mjesta.

The common variability of the predictor system of variables and criterion tests for the sample of 16-year – old boys is 67%, which means that such a predictor system explains, at this age, a very high level of the total variance of a criterion (table 6). The statistically significant impact was attained by the tests: running 30m high start and vertical jump test.

Tabela 6. Regresiona analiza varijable MFEDZ (II razred srednje škole)

Table 6. Multiple Regression Analysis (II class of secondary school)

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ 20	-.54	.10	.10	5.40	.23
TRČ 30	-.66	-.40	-.51	33.66	.00
MFEBMS	.49	-.04	-.03	1.47	.63
MFEBML	.43	.12	.11	4.73	.12
MFEBMN	.51	-.04	-.03	1.53	.59
MFEDM	.65	.04	.05	3.25	.58
MFETM	.62	-.00	.00	0.00	.95
MFEVM	.74	.38	.46	34.04	.00
MBTAPR	.58	.05	.04	2.32	.53
MISK	-.26	.08	.06	1.56	.30
MDPK	.40	.06	.05	2.00	.43
MSPA	.20	-.01	-.00	0.00	.88

DELTA=.67 RO=.83 Q=.00

DELTA=.67 RO=.83 Q=.00

U tabeli 7 su dati rezultati regresione analize za uzrast sedamnaestogodišnjih dječaka. Zajednički varijabilitet prediktorskog sistema varijabli i kriterijumskog testa je 52%, što označava da primijenjeni prediktorski sitem objašnjava u ovom uzrastu toliki dio ukupne varijanse atletske discipline skok udalj. Statistički značajan uticaj na rezultate u atletskoj disciplini skok udalj pojedinačno, ostvarili su testovi trčanje 20 metara leteći start, trčanje 30 metara visoki start, bacanje medicinke iz sjeda, bacanje medicinke iz ležanja, bacanje medicinke nazad preko glave, skok uvis s mjesta i taping rukom.

Table 7 gives the results of the regression analysis for the age of 17-year-old boys. The common variability of the predictor system of variables and criterion test is 52%, which means that the applied predictor system explains, at this age, such a part of the total variance of track and field discipline long jump. The statistically significant impact on the results in long jump individually was obtained by the tests: running 20 m flying start, running 30 m standing start, medical ball throwing from sitting position, medical ball throwing from lying position, medical ball throwing backward overhead, vertical jump test and a hand tapping.

Tabela 7. Regresiona analiza varijable MFEDZ (III razred srednje škole)

DELTA=.52 RO=.72 Q=.00

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ 20	-.33	-.23	-.22	7.26	.00
TRČ 30	-.42	-.17	-.16	6.72	.03
MFEBMS	.27	-.18	-.24	6.48	.02
MFEBML	.34	.17	.23	7.82	.04
MFEBMN	.43	.21	.20	8.60	.01
MFEDM	.48	-.05	-.06	2.88	.52
MFETM	.50	.12	.14	7.00	.12
MFEVM	.56	.31	.39	21.84	.00
MBTAPR	.12	-.18	-.15	1.80	.03
MISK	-.20	-.00	-.00	0.00	.06
MDPK	.27	.11	.10	2.70	.17
MSPA	.15	.06	.00	0.00	.43

Table 7. Multiple Regression Analysis (III class of secondary school)

DELTA=.52 RO=.72 Q=.00

Regresiona analiza za uzrast osamnaestogodišnjih dječaka (tabela 8) pokazuje da je zajednički varijabilitet prediktorskog sistema varijabli i kriterijumskog testa 49%, što pokazuje da primijenjeni prediktorski motorički sitem objašnjava u ovom uzrastu polovičan prostor ukupnog varijabiliteta atletske discipline skok udalj. Statistički značajni regresioni koeficijenti, odnosno statistički značajan uticaj na rezultate u atletskoj disciplini skok udalj pojedinačno, ostvarili su testovi bacanje medicinke iz ležanja, skok uvis s mjesta i test špagat.

The regression analysis for the age of 18-year-old boys (Table 8) shows that the common variability of the predictor system variables and criterion tests is 49%, which shows that the applied predictor motor system explains, at this age, halved space of the total variability of long jump. The statistically significant regression coefficients, namely the statistically significant impact on the results in long jump individually was accomplished by the tests: medical ball throwing from lying position, vertical jump test and a spagat test.

Tabela 8. Regresiona analiza varijable MFEDZ (IV razred srednje škole)

DELTA=.49 RO=.70 Q=.00

Varijable/ Variable	r	PART-r	BETA	P	Q-BETA
TRČ 20	-.47	-.09	-.12	5.64	.25
TRČ 30	-.52	-.11	-.15	7.80	.18
MFEBMS	.36	-.07	-.08	2.88	.37
MFEBML	.50	.22	.27	13.50	.00
MFEBMN	.37	.09	.08	2.96	.28
MFEDM	.53	-.02	-.04	2.12	.73
MFETM	.51	.05	.06	3.06	.52
MFEVM	.57	.27	.37	21.09	.00
MBTAPR	.22	-.08	-.07	1.54	.29
MISK	-.13	-.07	-.05	0.65	.37
MDPK	.07	.03	.03	0.21	.66
MSPA	.00	-.18	-.15	0.00	.03

Table 8. Multiple Regression Analysis (IV class of secondary school)

DELTA=.49 RO=.70 Q=.00

Diskusija

Atletske discipline nude mogućnosti za sportski uspjeh veoma različitim ličnostima, tjelesnim konstitucijama i prirodnim sportskim talentima, više nego bilo koji drugi sport (Sultana i Pandi, 2013).

Kruger (2006) navodi da je sproveden veoma mali broj istraživanja koja se odnose na identifikaciju i razvoj talenata u atletskom sprintu i skoku udalj, a posebno ona koja se odnose na mlade atletičare, bilo djevojčice ili dječake.

Discussion

Track and field events more than any other sport offer the opportunities for the sport success to very different persons, body structures and natural sport talents, (Sultana and Pandi, 2013).

Kruger (2006) argues that a very small number of researches related to the identification and development of talents in an athletic sprint and a long jump, especially those related to young male or female athletes, was carried out by that moment.

Selekcija u sportu podrazumijeva višestepeni proces koji započinje identifikacijom sportskog talenta (odabir, rani izbor), a nastavlja se karakterizacijom sportskog talenta (usmjeravanje, određivanje sportske osobenosti). Preostale aktivnosti, koje se ponekad pripisuju selekciji, su njena nadgradnja i ne zadovoljavaju osnovni princip selekcije u sportu, otkrivanje, prepoznavanje i usmjeravanje novih sportskih talenata. Čak, šta više, nekada predstavljaju ispravljanje grešaka napravljenih u toku identifikacije i karakterizacije (Idrizović, 2010).

Foreman (1989) ističe da se u području atletike, prirodna brzina, eksplozivna snaga, koračni ritam, snaga, koordinacija i nizak procenat masti smatraju veoma važnim. Istraživači Univerziteta u Indijani su prepoznali potencijal mladih sportista i predvidjeli njihov učinak u pojedinim atletskim disciplinama. Kao osnovne za to su definisali testove skok udalj s mjesta, skok uvis s mjesta, petoskok i trčanje na 30 metara iz stojećeg stava, za muške atletičare.

Sa druge strane Taylor i Beith (2000) ističu da iako nijedan test ne može sa potpunom preciznošću da predvidi vrhunska ostvarenja u skoku udalj, određeni rezultati u nekim testovima itekako mogu poslužiti kao pokazatelj uspjeha.

Sve prethodno navedeno uz veliki broj veoma sličnih istraživanja inicirao je strukturiranje prediktorskog sistema motoričkih varijabli za ovo istraživanje. Zapravo, cilj je bio da se u prostoru motoričkih sposobnosti, koje su najodgovornije za vrhunskih rezultat u skoku udalj, utvrde oni motorički testovi, koji imaju najveći nivo projekcije krajnjeg rezultata, a samim tim i najveću selektivnu vrijednost.

Sistem motoričkih testova, koji je primijenjen u ovom radu, sa rasponom od 27%, odnosno od 41% kod jedanaestogodišnjaka do 67% kod šesnaestogodišnjaka, u prosjeku objašnjava ukupnu varijansu atletske discipline skok udalj sa 57,37%. Veoma slične podatke u svom radu su dobili Sultana i Pandi (2013). Iako se radi o relativno velikom prostoru ukupnog varijabiliteta jedne atletske discipline, može se reći da preostali dio sposobnosti i karakteristika antropološkog sistema ima značajan udio u uticaju na rezultat u atletskoj disciplini skok udalj, posebno onih specifičnog karaktera. Takvu tvrdnju u svom radu iznose i Li-min i sar. (2009).

Iako se u istraživanjima najčešće ističe da rezultat u atletskoj disciplini skok udalj, prije svega određuje ostvarena brzina trčanja zaleta (Locatelli, 1993), na osnovu rezultata ovog rada se može vidjeti da veoma veliki nivo uticaja imaju i druge antropološke sposobnosti i karakteristike, koje nisu iz prostora dominantnih prediktora, koji su kao takvi do sada označavani.

The selection in sport means a multi-level process starting by the identification of a sport talent (selection, early choice), and continues with the characterization of a sport talent (orientation, determining of sport specialty). The remaining activities that are sometimes ascribed to a selection are its superstructure not satisfying the basic principle of a sport selection, discovering, recognizing and orienting of new sport talents. Moreover, they sometimes represent the error correction made during the identification and characterization (Idrizovic, 2010).

Foreman (1989) highlights that, in the area of athletics, natural speed, explosive strength, step rhythm, strength, coordination and a low level of fats are considered to be very important. The researchers from the University in Indiana recognized the potential of young sportsmen and predicted their accomplishment in some athletic disciplines. The defined tests standing long jump, vertical jump test, five bounds and running 30 m from standing position as basic for male athletes in this area.

On the other side, Taylor and Beith (2000) highlight that although no test can predict the top achievements in a long jump with a total accuracy, some results in particular tests really can serve as the indicators of a success.

All previously mentioned, with a big number of very similar researches initiated the structuring of the predictor system of motor variable for this research. Actually, the goal was to determine those motor tests having the biggest projection level of a final result and also the biggest selective value as the most responsible for the top result in a long jump.

The system of motor tests, prepared in this work, with a span from 27%, accordingly of 41% for eleven-year-olds to 67% for sixteen-year-olds, in average explain the total variance of an athletic discipline long jump of 57,3 %. Very similar data like those of this work were obtained by Sultana and Pandi (2013). Although, it is a relatively big space of the total variability of one track and field discipline, it can be said that the remaining part of abilities and characteristics of anthropological system have an important part in the impact on the results in long jump, especially for those with a specific character. Li-min et al. (2009) give such an argument in their work.

Although it is most frequently highlighted, at the competitions, that a result in a track and field discipline long jump, first of all, is determined by the accomplished approach speed (Locatelli, 1993), on the basis of such a result it can be seen that other anthropological abilities and characteristics which have not been designated as such so far have a very high level of influence.

In this research, of twelve applied motor tests, as the most important and dominantly before all others, a test

U ovom istraživanju, od dvanaest primijenjenih motoričkih testova, kao najznačajniji prediktor se izdvojio, dominantno prije svi ostalih, test skok uvis s mjesta, koji je statistički značajan uticaj na rezultat u atletskoj disciplini skok udalj ostvario u šest uzrasnih subuzoraka, a u jednom je bio na samoj granici statističke značajnosti. Sa druge strane, od dvanaest motoričkih testova, koji su u ovom radu predstavljali prediktorski sistem varijabli, samo dva testa niti u jednom uzrasnom subuzorku nisu imali statistički značajan nivo predikcije rezultata u skoku udalj. Prvo, to je test za procjenu gipkosti ramenskog dijela tijela, iskret palicom, a drugo, mnogo interesantnije i bitnije za podatke koji se dobijaju ovim istraživanjem, to je test skok udalj s mjesta. Dakle, na osnovu rezultata, koji su dobijeni ovim radom, motorički test skok udalj s mjesta se ne bi trebao koristiti kao selektivni test za atletsku disciplinu skok udalj. U odnosu na sve ostale motoričke testove koji su korišteni u ovom istraživanju, njegova prediktivno-selektivna vrijednost je neuporedivo manja. Može se reći da ne postoji. Skok uvis s mjesta, i troskok s mjesta je imaju. Ovakvi podaci dobijaju na značaju kada se uporede sa nalazima Siang (2006), koji dobija identičan nalaz, da skok udalj s mjesta nema statistički značajan uticaj na rezultat u atletskoj disciplini skok udalj, već da to prvenstveno ima test skok uvis s mjesta.

Kruger (2006) u svom radu takođe ne dolazi do sazananja da skok udalj s mjesta ima statistički značajan uticaj na atletsku disciplinu skok udalj, već da to ima brzina trčanja.

Poslije testa skok uvis s mjesta, najveći broj puta se kao statistički značajan prediktor pojavljivao test trčanje 20 metara leteći start sa pet takvih statusa, a potom troskok s mjesta i trčanje na 30 metara iz stojećeg stava sa po četiri takva statusa. Testovi koji procjenjuju sposobnost brzine trčanja samo u dva subuzorka nisu ostvarili statistički značajan uticaj. Uzimajući u obzir da je brzina trčanja, odnosno njena iskorištenost glavni faktor rezultata u skoku udalj (Strishak i sar., 1989; Locatelli, 1993; Nixdorf i sar., 2010), ovaj rezultat je potpuno očekivan. U atletskoj disciplini skok udalj bitniji je zapravo nivo iskorištenosti brzine trčanja, gdje su svakako u prednosti skakači koji mogu postići veću maksimlanu brzinu trčanja.

Brzina trčanja kojom skakači dolaze na odraznu dasku se u zavisnosti od njihovih karakteristika kreće između 90 i 95% od njihove maksimalne sprinterske brzine trčanja. Maksimalna brzina trčanja tokom zaleta za skok udalj se kod vrhunskih skakača nalazi između 10,50m/s do 11, 23m/s (Nixdorf i Brüggemann, 1990; Ariel, 1992).

of a vertical jump test come to a prominence and this test accomplished a statistically significant impact on a result in a track and field discipline long jump accomplished in six age subsamples, and in one of them it was at the very border of a statistical significance.

On the other side, of twelve motor tests which represented the predictor system of variables in this work, only two tests in no one age subsample had a statistically significant level of the prediction of results in a long jump. Firstly, this is a test for the estimation of flexibility of shoulder body part, side bend with a stick, and, secondly, the test of a standing long jump is much more interesting and important for data obtained in this research. Therefore, on the basis of the results obtained in this works, the motor test of a standing long jump should not be used as a selective test for a track and field discipline long jump. In comparison to all other motor tests used in this research, its predicative –selection value is incomparably smaller. It can be said that it does not exist. A vertical jump test and standing triple jump have this one. Such data get their significance when compared with the findings by Siang (2006), which gets an identical finding, that a standing long jump have no a statistical impact on a result in a track and field discipline long jump, but it firstly is related to a vertical jump test.

Kruger (2006) in his work also does not find that a standing jump has a statistically significant impact on the result of an athletic discipline standing jump, but a running speed has this significance.

After the vertical jump test, a test of running 20 m flying start in most situations emerged as a statistically significant predictor with five such statuses, followed by the test of standing triple jump and running 30 m from standing position with four such statuses. The tests estimating the ability of a running speed only in two subsamples did not accomplish a statistically significant impact. Taking into account that the running speed, namely its usability is a crucial factor for the results in a long jump (Strishak et al., 1989; Locatelli, 1993; Nixdorf et al., 2010), this result is absolutely expected. In a track and field discipline long jump, the level of running speed usability is more significant, and the jumpers which can attain a higher maximal running speed are advantageous.

The running speed by which jumpers come to take-off board, depending on their characteristics and on a maximal running speed, ranges between 90 and 95% of maximal running speed. The maximal running speed during the approach for a long jump is, for top jumpers, between 10,50 m/s and 11,23 m/s (Nixdorf and Brugermann, 1990; Ariel, 1992).

Locatelli (1993) ističe izvanredan nivo iskorištenosti brzine trčanja zaleta kod dvojice skakača udalj. Carl Lewis je u Tokiju 1991. godine prilikom skoka od 8,91m, deset metara, od 11-tog do jednog metra prije odraza, prešao za 0,89s, što predstavlja brzinu od 11,235m/s, a što je 95,3% njegove maksimalne brzine trčanja. Giovanni Evangelisti je prilikom skoka od 8,08m, istih deset metara savladao za 0,93s, što je brzina od 10,75m/s, koja je 97,5% njegove maksimalne brzine trčanja. Značaj brzine zaleta za dužinu skoka udalj najbolje objašnjavaju podaci većeg broja istraživanja koje prezentira Homenkov (1977), i ističe, da povećanje brzine zaleta sa 9,1 na 10,7m/s dovodi do poboljšanja rezultata od 690 do 890cm. Strishak i sar. (1989) ističu da dužina skoka direktno zavisi od brzine trčanja prije faze odraza i predstavljaju prediktivni model brzine trčanja zaleta u odnosu na dužinu skoka udalj.

Prediktivni značaj motoričkog testa troskok s mjesta je bitan prije svega u svijetlu činjenice da test skok udalj s mjesta nije imao status statistički značajnog prediktora, dok je ovaj test to postigao četiri puta. Glavni faktor ovakvog rezultata je specifičnost kretne strukture troskoka s mjesta, koja je mnogo sličnija kriterijumskom testu u ovom istraživanju nego je to kretna struktura skoka udalj s mjesta. Skok udalj s mjesta i troskok s mjesta imaju početni odraz sa dvije noge, a kod troskoka se izvode još dva skoka sa odrazom sa jedne noge, što je podudarno sa odrazom u kriterijumskom testu. Podudarnsot kretnih struktura, odnosno dinamička korespodencija, dovodi do podudarnog angažmana aktivirane muskulature, a svemu tome je rezultat, statistički značajan prediktivni potencijal testa troskok s mjesta u odnosu na atletsku disciplinu skok udalj.

Statistički značajan uticaj preostalih motoričkih testova, koji se pojavio u jednom do dva subuzorka ovog istraživanja, generalno ukazuje još na dvije činjenice. Prvo, da je veliki broj funkcionalno-motoričkih potencijala, koji sinergijski djeluju sa onim potencijalima koje nazivamo osnovnim, i da njih ima u dosta velikom broju u okviru oni motoričkih potencijala, koji nisu bili predmet ovog istraživanja. To je i razlog zašto je ukupan zajednički varijabilitet prediktorskog sistema i kriterijuma relativno mali. Drugo, da je specifičnost svakog subuzorka, faktor koji uvijek može dovesti do rezultata, koji djelimično odudaraju od do tada standardnih vrijednosti.

Zaključak

Iako postoji relativno mali broj istraživanja kojima se utvrđuju prediktivno-selektivne vrijednosti motorički-

Locatelli (1993) highlights an extraordinary level of usage of an approach running speed of two jumpers. Carl Lewis in Tokyo in 1991 during the approach for the jump of 8,91 m, 10 meters, from 11-th to one meter before the takeoff ran for 0.89s, which represents a speed of 11,23 m/s and it is 95,3% of his maximal speed. Giovanni Evangelisti, during the jump of 8.08m, the same ten meters run for 0.93s which is the speed of 10,75 m/s and 97,5% of his maximal running speed. The significance of approach for the length of a long jump is best explained by the data from a big number of researches presented by Homenkov (1977), and he highlights that the increment of approach running speed from 9,1 to 10,7 m/s leads to the increment of a result from 690 to 890 cm. Sthrishak et al. (1989) highlight that the jump length immediately depends on the running speed before a takeoff phase and represent a predictive model of an approach running speed in comparison to length of long jump.

The predictive significance of a motor test a standing triple jump is important, first of all, in sense of the fact that the test of a standing long jump had not a status of a statistically significant predictor, while this test accomplished it four times. The main factor of such a result is a specialty of a movement structure of a standing triple jump, which is much more similar to a criterion test in this research than the movement structure of a standing long jump. A standing long jump and standing triple jump have a starting takeoff with two legs, and for a standing triple jump there are two more jumps with a takeoff on one leg, which overlaps with the takeoff in the criterion test. The overlapping of movement structures, namely dynamic correspondence, lead to the same engagement of activated muscles, and all this produces a result that is a statistically significant predictive potential of test of standing triple jump in comparison to a track and field discipline long jump.

The statistically significant impact of remaining motor tests, which emerged in one to two subsamples of this research, generally indicates to two more facts. Firstly, a big number of functional-motor potentials which synergistically work with those so-called basic potentials, and there are a plenty of them within those motor potentials that were not a topic of this research. This is the reason why the total common variability of a predictor system and criteria is relatively small. Secondly, the specialty of each subsample is a factor which can always lead to a result which partly deflects from previous standard values.

Conclusion

Although there is a relatively small number of researches that determine the selection values of motor

ih testova za pojedine atletske discipline, a najčešće korišteni testovi su rezultat dugogodišnjeg trenerskog iskustva, ovaj rad je potvrdio da se većina tih testova opravdano koristi u takve svrhe. Pored toga, ovim radom se došlo do veoma bitnog saznanja, da motorički test skok udalj s mjesta nema selektivnu vrijednost za atletsku disciplinu skok udalj.

Baterija testova koja je strukturirana ovim istraživanjem i koja se kao takva može koristiti u selekciji skakača udalj, sastavljena je od testova skok uvis s mjesta, troskok s mjesta, trčanje 20 metara leteći start, trčanje 30 metara visoki start i bacanje medicinke iz ležanja.

Na kraju, nasljeđe kao samostalan preduslov, čak i u najuspješnijim selekcionim sistemima, nije garancija uspjeha. Mnogi talentovani mladi sportisti ne uspijevaju iskoristiti svoje stvarne potencijale zbog neodgovarajućih trening metoda. Ovo se posebno odnosi na metode koje se koriste tokom godina biološkog razvoja. Poznati sovjetski trener sprinta, Valentin Petrovski, potvrđuje da je gubljenje talenata, najčešće izazvano trenerskim nemilosrdnim greškama i varvarskim pogledom na brzi uspjeh. Oni uništavaju mlade atletičare, u pokušaju da za dvije do tri godine, proizvedu od dječaka vrhunskog sportistu (Kutsar, 1991).

tests for some athletic disciplines, and the most frequently used tests are the results of long-range experience of coaches, this work ascertained that the majority of these tests is reasonably used for such purposes. Beside this, this work helps in discovering one very important finding, that a motor test standing long jump has no selective value for a track and field event long jump.

The motor test battery, structured within this research and which as such can be used in the selection of long jumpers, consists of tests of vertical jump test, standing triple jump, running 20m flying start, running 30m standing start and medical ball throwing from lying position.

Finally, the heritage as an independent precondition, even in most successful selection systems, is not a warrant for a success. Many talented young sportsmen do not succeed to use their real potentials because of inadequate training methods. This is especially related to those methods used during the years of a biological development. Well-known Soviet sprint coach, Valentine Petrovski, proves that the loss of a talent is most frequently caused by merciless errors of coaches and barbarian view at the fast success. They destroy young athletes, trying to produce a top athlete from a small boy in two to three years (Kutsar, 1991).

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