

SPORT SELECTION OF TALENTED ADOLESCENTS (13-YEARS-OLD)

R. KARAPETROVA¹ D.SHABANLIYSKI²

Abstract: *Effective training process in many cases is continuation to correct sport selection (for sport or discipline). Modern development of sport theory and practice is characterized by continuous improvement of knowledge in the direction with establishment of objective criteria for sport selection.*

The aim of the following study is to update the system for sport selection of talented young athletes age 13-years-old in the Republic of Kuwait. The subject of the study are the anthropometric and physical abilities of respondents. Indexes presenting anthropometrical (in total 24) and physical development (in total 20) were analyzed. Respondents are 50 boys aged 13-years-old from Kuwait.

Respondents average height and weight are respectively 1.64 m and 66.7 kg. Based on all gathered data we developed evaluation tables for assessment of sport talent – both of anthropometric and physical aspects.

We have some reservation in the regard of applying the research results in countries with radically different geographical location and climate, where we can find some specific growth acceleration in teenagers.

All results are carrying the typical signs of anthropometric and physical development of respondents from the studied geographical region. As a key recommendation, we should note that is needed serious lowering of weight and increasing of physical abilities of students not involved in organized training process in the age of 13-years-old.

Key words: *sport, sport selection, anthropometry, physical abilities.*

1. Introduction

The path to each sport success has its beginning. This is the process of sport selection – the selection of the most suitable as coordination, motor abilities and intellectual aspect individuals for the relevant sport. (Стойков, 2007)

Effective training process in many cases is continuation to correct sport selection (for sport or discipline) (Брил, М., В. Филин, 1982). Sport practice is rich

of examples where athlete realize their potential on world record level or wins Olympic title in a discipline after unsuccessful start of their sport career in different from their first-choice discipline or sport.

Wrong sport selection is a start in the wrong direction, leading to inadequate consumption of time during most creative periods of human life, young person's psyche trauma and negative emotions

¹ National Sports Academy "Vassil Levski", Department "Track & Field, Sofia, Bulgaria.

² PhD student.

(Сирис, Гайдарска, Рачев, 1983; Стойков, 2007).

Modern development of sport theory and practice is characterized by continuous improvement of knowledge in the direction with establishment of objective criteria for sport selection. (Травин, 1983)

All scientists working on the problem of sport selection take focus their attention on anthropometric indexes (height, lower and upper limbs measurements, trunk length, shoulder girdle, weight) and physical indexes (strength, speed, endurance, agility) of potential young athletes.

2. Methods

The aim of the following study is to update the system for sport selection of talented young athletes age 13-years-old from the Republic of Kuwait.

The subject of the study are anthropometric and physical indexes of respondents not practicing organized sport. The study is focused on indexes revealing anthropometric growth and physical development.

For ascertaining the level of anthropometric development we differentiated 24 indexes (see Table 1) and for physical development – 23 indexes (see Table 3).

Respondents were 50 boys aged 13-years-old from the Republic of Kuwait.

3. Results and Analysis

We present the results from the variance analysis on Table 1.

Anthropometric indexes variance analysis

Table 1

sig.	indexes	R	X min	X max	\bar{x}	m^2	S	V%	As	Ex
X1	Height (m)	0,25	1,5	1,75	1,64	0,02	0,07	4,41	-0,56	0,52
X2	Weight (kg)	61	49	110	66,7	5,96	18,83	28,24	1,52	1,54
X3	Body Mass Index (BMI)	19,61	18,9	38,51	24,53	1,89	5,97	24,33	1,56	1,56
X4	Hands stretch (cm)	25	152	177	164,8	2,72	8,6	5,22	0,13	-1,23
X5	Upper limb length (cm)	12	66	78	72,2	1,18	3,74	5,17	-0,05	-0,57
X6	Forearm length (cm)	7	30	37	32,2	0,65	2,04	6,35	1,42	1,35
X7	Forearm measurement - strong arm (cm)	18	20	38	29,4	1,65	5,21	17,72	-0,11	0,09
X8	Forearm measurement - weak arm (cm)	17	19	36	29,1	1,72	5,45	18,71	-0,32	-0,33
X9	Arm (to elbow) length (cm)	8	21	29	24,9	0,74	2,33	9,36	-0,05	0,16
X10	Arm (to elbow) measurement - strong arm (cm)	15	21	36	26,7	1,67	5,27	19,74	0,98	-0,33
X11	Arm (to elbow) measurement - weak arm (cm)	14	21	35	25,9	1,61	5,09	19,64	1,06	-0,23
X12	Lower limb length (cm)	15	84	99	92,5	1,73	5,48	5,93	-0,32	-1,59
X13	Thigh length (cm)	17	42	59	47,8	1,54	4,87	10,19	1,25	1,52
X14	Thigh measurement - strong leg (cm)	31	34	65	50,4	3,05	9,65	19,15	0,28	-0,27
X15	Thigh measurement - weak leg (cm)	31	33	64	49,4	3,05	9,65	19,54	0,28	-0,27
X16	Shank length (cm)	12	35	47	40,2	1,25	3,97	9,87	0,43	-0,89
X17	Shank measurement - strong leg (cm)	17	27	44	33,8	2,02	6,37	18,86	0,61	-1,25
X18	Shank measurement - weak leg (cm)	17	26	43	33,3	1,94	6,15	18,46	0,48	-1,29
X19	Trunk length (cm)	61	49	110	66,7	5,96	18,83	28,24	1,52	1,24
X20	Shoulder length (cm)	13	43	56	49,9	1,24	3,93	7,87	0,22	0,36
X21	Chest measurement (cm)	31	78	109	90,7	3,45	10,9	12	0,67	-0,76
X22	Measurement maximum inhalation (cm)	31	82	113	94,5	3,48	11,01	11,65	0,68	-0,76
X23	Measurement exhalation (cm)	30	77	107	89,1	3,47	10,97	11,99	0,68	-0,85
X24	Difference between inhalation and exhalation (cm)	1	5	6	5,4	0,16	0,52	9,56	0,48	-1,28

The data sample is characterized by the following cases distribution: highly homogeneous – 13 indexes (X1, X4, X5, X6, X9, X12, X13, X16, X20, X21, X22, X23 and X24); moderately homogeneous (X7, X8, X10, X11, X14, X15, X17 and X18) and heterogeneous (X2, X3 and X19).

Kurtosis indexes vary between -0.56 and 1.56, and skewness – from -1.59 and 1.56.

Respondents height (X1) has average value of 1.64 m, range (R) is 0.25 m, and minimum and maximum values are between 1.50 and 1.75 m.

Weight (X2) has average value of 66.7 kg, ranges from 49 to 110 kg, as range (R) is 61 kg. Specific for this age group are the extremely high average and maximum values.

BMI (X3) stands with average value of 24.53, ranging from 18.9 to 38.51 – R=19.61.

All other studied anthropometric indexes are derived from height and weight are presented in Table 1 and we will therefore not discuss them in details.

Of interest are four indexes (from X21 to X24), presenting the level of functional preparedness:

- chest measurement (X21) has average value of 90.7 cm, ranging from 78 to 109 cm and range – 31 cm;
- the measurement of maximum inhalation (X22) has average value of 94.5 cm, ranging from 82 to 113 cm with range (R) of 31 cm;
- the measurement of maximum exhalation (X23) ranges from 77 to 107 cm (R=30 cm) with average value of 89.1 cm;
- the difference between maximum inhalation and exhalation (X24)

has average value of 5.4 cm, ranging from 5 to 6 cm (R=1 cm).

Table 2 offers an opportunity to assess the level of anthropometric development. Evaluation was made using 7-scale-evaluation scale as follows: very high (7), high (6), above average (5), average (4), below average (3), low (2) and very low (1) level of development of the corresponding index.

In Table. 3 are shown the results of the variance analysis of physical indexes. The sample data is characterized by the following distribution of cases: highly homogeneous – 1 index (X1); moderately uniform – 17 indicators (X2, X3, X4, X5, X6, X7, X8, X9, X13, X14, X15, X17, X18, X19, X20, X22); diverse – 5 indexes (X10, X11, X12, X16, X23).

The data in the table allow us to understand the physical abilities of the respondents in this age as follows:

- 1.Sprinting abilities (X4, X5, X6) – start and start acceleration, running through the distance, speed endurance;
- 2.Endurance – (X7);
3. Explosive power of lower limbs – manifested in the horizontal (X8, X9, X10) and in the vertical plane (X11, X12);
4. Speed-strength abilities of the shoulder girdle (X13);
5. Complex speed-strength abilities – in gradual (X14, X15, X16) and in rotation mode (X17, X18, X19, X20);
6. Speed-strength abilities of the shoulder girdle and throwing hand with a priority of speed (X21);
7. Speed-strength abilities of the shoulder girdle and throwing hand with priority of strength (X22);
8. Flexibility.

Table 2
Anthropometric development evaluation table

sig.	indexes	evaluation mark						
		very high	high	above average	average	below average	low	very low
X1	Height (m)	over 1,78	1,72-1,78	1,69-1,71	1,61-1,68	1,57-1,60	1,50-1,56	under 1,50
X2	Weight (kg)	over 104,36	85,54-104,36	76,13-85,53	57,29-76,12	47,87-57,28	29,04-47,86	under 29,04
X3	Body Mass Index (BMI)	over 36,47	30,51-36,47	27,53-30,50	21,55-27,52	18,56-21,54	12,59-18,55	under 12,59
X4	Hands stretch (cm)	over 182,00	173,41-182,00	169,11-173,40	160,50-169,10	156,20-160,49	147,60-156,19	under 147,60
X5	Upper limb length (cm)	over 79,68	75,95-79,68	74,08-75,94	70,33-74,07	68,46-70,32	64,72-68,45	under 64,72
X6	Forearm length (cm)	over 36,28	34,25-36,28	33,23-34,24	31,18-33,22	30,16-31,17	28,12-30,15	under 28,12
X7	Forearm measurement - strong arm (cm)	over 39,82	34,62-39,82	32,02-34,61	26,80-32,01	24,19-26,79	18,98-24,18	under 18,98
X8	Forearm measurement - weak arm (cm)	over 40,00	34,56-40,00	31,84-34,55	26,38-31,83	23,65-36,37	18,20-23,64	under 18,20
X9	Arm (to elbow) length (cm)	over 29,56	27,24-29,56	26,08-27,23	23,74-26,07	22,57-23,73	20,24-22,56	under 20,24
X10	Arm (to elbow) measurement - strong arm (cm)	over 37,24	31,98-37,24	29,35-31,97	24,07-29,34	21,43-24,06	16,16-21,42	under 16,16
X11	Arm (to elbow) measurement - weak arm (cm)	over 36,08	31,00-36,08	28,46-30,99	23,36-28,45	20,81-23,35	15,72-20,80	under 15,72
X12	Lower limb length (cm)	over 103,46	97,99-103,46	95,25-97,98	89,76-95,24	87,02-89,75	81,54-87,01	under 81,54
X13	Thigh length (cm)	over 57,54	52,68-57,54	50,25-52,67	45,37-50,24	42,93-45,36	38,06-42,92	under 38,06
X14	Thigh measurement - strong leg (cm)	over 69,70	60,06-69,70	55,24-60,05	45,58-55,23	40,75-45,57	31,10-40,74	under 31,10
X15	Thigh measurement - weak leg (cm)	over 68,70	59,06-68,70	54,24-59,05	44,58-54,23	39,75-44,57	30,10-39,74	under 30,10
X16	Shank length (cm)	over 48,14	44,18-48,14	42,20-44,17	38,22-42,19	36,23-38,21	32,26-36,22	under 32,26
X17	Shank measurement - strong leg (cm)	over 46,54	40,18-46,54	37,00-40,17	30,62-36,99	27,43-30,61	21,06-27,42	under 21,06
X18	Shank measurement - weak leg (cm)	over 45,60	39,46-45,60	36,39-39,45	30,23-36,38	27,15-30,22	21,00-27,14	under 21,00
X19	Trunk length (cm)	over 103,36	85,04-103,36	75,88-85,03	57,54-75,87	48,37-57,53	30,04-48,36	under 30,04
X20	Shoulder length (cm)	over 57,76	53,84-57,76	51,88-53,83	47,94-51,87	45,97-47,93	42,04-45,96	under 42,04
X21	Chest measurement (cm)	over 112,50	101,61-112,50	96,16-101,60	85,25-96,15	79,80-85,24	68,90-79,79	under 68,90
X22	Measurement maximum inhalation (cm)	over 116,52	105,52-116,52	100,02-105,51	89,00-100,01	83,49-88,99	72,48-83,48	under 72,48
X23	Measurement exhalation (cm)	over 111,04	100,08-111,04	94,60-100,07	83,62-94,59	78,13-83,61	67,16-78,12	under 67,16
X24	Difference between inhalation and exhalation (cm)	over 6,44	5,93-6,44	5,67-5,92	5,14-5,66	4,88-5,13	4,36-4,87	under 4,36

Our assessment in general for all studied indicators of physical potential is: very low level of development compared to some data from scientific and methodological literature for people from other geographical regions.

In Table. № 4 we present an opportunity to assess the degree of development of

anthropometric indicators – we used once again a 7-degree scale.

Comparing capabilities of each boy of the same age with the proposed evaluation tables is easy to assess the degree of development of physical indicator in the current age and to direct the person to the right sport or discipline of athletics for him.

Physical indexes variance analysis

Table 3

sig.	indexes	R	X min	X max	\bar{x}	$m\sigma$	S	V%	As	Ex
X1	Height (m)	0,25	1,5	1,75	1,64	0,02	0,07	4,41	-0,56	0,52
X2	Weight (kg)	61	49	110	66,7	5,96	18,83	28,24	1,52	2,24
X3	Body Mass Index (BMI)	19,61	18,9	38,51	24,53	1,89	5,97	24,33	1,56	2,66
X4	30 m standing start (sec.)	2,71	5,3	8,01	6,69	0,34	1,08	16,18	-0,09	-1,89
X5	60 m standing start (sec.)	5	10,6	15,6	12,78	0,53	1,68	13,13	0,05	-1,03
X6	100 m standing start (sec.)	12,07	21	33,07	26,23	1,23	3,9	14,85	0,16	-0,73
X7	300 m standing start (sec.)	45	62	107	83,2	4,6	14,56	17,5	-0,02	-1,05
X8	Standing long jump (m)	1,05	1	2,05	1,61	0,12	0,37	24,59	0,21	-1,29
X9	Standing triple jump (m)	2,1	4	6	4,76	0,25	0,78	16,35	0,61	-1,31
X10	Standing five stride jump (m)	8,9	2	11	7,44	0,78	2,47	33,14	-1,04	2,9
X11	Standing vertical jump (cm)	30	20	50	31,5	3,94	12,45	36,36	1,02	-1,14
X12	Vertical jump from three strides (cm)	34	22	56	33,2	4,37	13,83	34,66	1,01	-1,09
X13	Throwing 2 kg med. ball with 2 hands overhead (m)	3,5	4,8	8,3	6,34	0,31	0,98	15,48	0,62	0,9
X14	Throwing 2 kg med. ball with 2 hands forward (m)	3,9	5,6	9,5	7,35	0,44	1,4	19,02	0,43	-1,01
X15	Throwing 2 kg med. ball with 2 hands backward (m)	4,1	6,4	10,5	7,96	0,44	1,38	17,33	1,09	0,27
X16	Difference between X14 and X15	1,4	-0,2	1,2	0,62	0,15	0,49	35,38	-0,43	-1,27
X17	Throwing 2 kg med. ball forward from right side (m)	4,7	5,9	10,6	7,67	0,52	1,64	21,37	0,82	-0,6
X18	Throwing 2 kg med. ball forward from left side (m)	4,3	5,6	9,9	7,13	0,47	1,48	20,71	0,81	-0,28
X19	Throwing 2 kg med. ball backward from right side (m)	4,3	4,5	8,8	6,37	0,46	1,45	22,76	0,87	-0,12
X20	Throwing 2 kg med. ball backwards from left side (m)	5	4	9	6,2	0,52	1,63	26,36	0,74	-0,38
X21	Standing throw of 150 g small ball with one hand (m)	26,9	20,4	47,3	26,91	2,46	7,78	28,91	2,31	6,19
X22	Standing 4 kg shot put throw(m)	3,5	4	7,5	5,5	0,33	1,05	19,03	0,63	0,11
X23	Flexibility	22	-12	10	-2,3	1,85	5,85	37,39	0,65	1,72

sig.	indexes	evaluation mark										
		very high	high	above average	average	below average	low	very low				
X4	30 m standing start (sec.)	under 4,53	4,53-5,60	5,61-6,14	6,15-7,23	7,24-7,77	7,78-8,85	over 8,85				
X5	60 m standing start (sec.)	under 9,42	9,42-11,09	11,10-11,93	11,94-13,62	13,63-14,46	14,47-16,14	over 16,14				
X6	100 m standing start (sec.)	under 18,43	18,43-22,32	22,33-24,27	24,28-28,18	28,19-30,13	30,14-34,03	over 34,03				
X7	300 m standing start (sec.)	under 54,08	54,08-68,63	68,64-75,91	75,92-90,48	90,49-97,76	97,77-112,32	over 112,32				
X8	Standing long jump (m)	over 2,35	1,98-2,35	1,80-1,98	1,43-1,80	1,24-1,43	0,87-1,24	under 0,87				
X9	Standing triple jump (m)	over 6,32	5,54-6,32	5,15-5,54	4,37-5,15	3,98-4,37	3,20-3,98	under 3,20				
X10	Standing five stride jump (m)	over 12,38	9,91-12,38	8,68-9,91	6,21-8,68	4,97-6,21	2,50-4,97	under 2,50				
X11	Standing vertical jump (cm)	over 56,40	43,95-56,40	37,73-43,95	25,28-37,73	19,05-25,28	6,60-19,05	under 6,60				
X12	Vertical jump from three strides (cm)	over 60,86	47,03-60,86	40,12-47,03	26,29-40,12	19,37-26,29	5,54-19,37	under 5,54				
X13	Throwing 2 kg med. ball with 2 hands overhead (m)	over 8,30	7,32-8,30	6,83-7,32	5,85-6,83	5,36-5,85	4,38-5,36	under 4,38				
X14	Throwing 2 kg med. ball with 2 hands forward (m)	over 10,15	8,75-10,15	8,05-8,75	6,65-8,05	5,95-6,65	4,55-5,95	under 4,55				
X15	Throwing 2 kg med. ball with 2 hands backward (m)	over 10,72	9,34-10,72	8,65-9,34	7,27-8,65	6,58-7,27	5,20-6,58	under 5,20				
X16	Difference between X14 and X15	over 1,60	1,11-1,60	0,87-1,11	0,38-0,87	0,13-0,38	-0,36-0,13	under -0,36				
X17	Throwing 2 kg med. ball forward from right side (m)	over 10,95	9,31-10,95	8,49-9,31	6,85-8,49	6,03-6,85	4,39-6,03	under 4,39				
X18	Throwing 2 kg med. ball forward from left side (m)	over 10,09	8,61-10,09	7,87-8,61	6,39-7,87	5,65-6,39	4,17-5,65	under 4,17				
X19	Throwing 2 kg med. ball backward from right side (m)	over 9,27	7,82-9,27	7,10-7,82	5,65-7,10	4,92-5,65	3,47-4,92	under 3,47				
X20	Throwing 2 kg med. ball backwards from left side (m)	over 9,46	7,83-9,46	7,02-7,83	5,39-7,02	4,57-5,39	2,94-4,57	under 2,94				
X21	Standing throw of 150 g small ball with one hand (m)	over 42,47	34,69-42,47	30,80-34,69	23,02-30,80	19,13-23,02	11,35-19,13	under 11,35				
X22	Standing 4 kg shot put throw(m)	over 7,60	6,55-7,60	6,03-6,55	4,98-6,03	4,45-4,98	3,40-4,45	under 3,40				
X23	Flexibility	under -14,00	-14,00- -8,16	-8,15- -5,24	-5,23-0,63	0,64-3,55	3,56-9,40	over 9,40				

4. Conclusion

The proposed approach can be enriched with inclusion of indexes specific for various sports, which will make presented results and assessment tables higher value for sport practice.

The study results carry the specifics of Kuwaiti sport school which is driver by the selected respondents – representatives of this country. Almost in all physical indexes we find lower values compared to respondents from other geographical regions. However, they present the trends and characteristics of respondents and universal human body development for selected age group.

There are some reserves for direct use of study results in different geographical regions, primarily with different climate, where we can find some specifics in body development in teenagers.

As a key recommendation we must note the serious weight lowering and increase in physical abilities level of students not involved in organized sports activities in the region in the age of 13-years.

References

1. Bril, M.: *Selection in sports games*. Moscow. Physical Culture and Sports, 1980.
2. Bachvarov, M., Slavchev, A., Yordanov, S.: *Track and field athletics*. Berlin. NSA Press, 2001.
3. Gugalovskii, A.: *The problems of sports selection theories*. In: TPFK, 8. M., 1986.
4. Gutev, G.: *Promise in sports technical characteristics on obstacles, Complex the factors for comprehension*. In: PhD. Thesis, Sofia. NSA, 2015.
5. Yonov, Y.: *Current problems of track and field athletics for children and adolescents*. Sofia. Bolide Ins., 2011.
6. Karapetrova, R., Solomu, Y., Stoykov, G., Gutev, G., Stoykov, S.: *Investigation of changes in anthropometric signs in athletes aged 11-15 years*. Vratsa, 2015.
7. Karapetrova, R., Solomu, Y., Stoykov, G., Lazarov, I.: *Anthropometric features as a prerequisite for selection of gifted children (13 years) for track and field athletics*. In: Conf. "European standards in sports education." Vratsa, 2015.
8. Krastev, Y., Kostov, B., Kadiiski, I., Dimitrov, D., Peev, N.: *Unified program for the selection and preparation of children and pioneers*. Sofia. BCFC, S., 1985.
9. Lazarov, Iv.: *Anthropometric models on flyers in baganeto at average distances. Dissertation*. Sofia: NSA, 2014.
10. Stoykov, St., Popova, S., et al.: *Athletics - Technique, Methodology of Training and Teaching*. Sofia. NSA, 2014.
11. Siris, P., Gaidarska, P., Rachev, Kr.: *Team and prediction ability at lengky athlete*. Moscow, Fizkul'tura i sport 1983.
12. Slanchev, P.: *Body proportions of sporting different types of sports*. In: VIF, T. 5, kn. 4. Sofia, 1971.

13. Stoykov, St., Amer, M., Miladinov, O.: *Experimenting and substantiating a system for selection of young copiers in Libya at the age of 11-12 years*. In: SiN, 4.,2005.
14. Travin, Y., Polunin, A., Prokudin, B.: *Physical culture in school*. Moscow. GTSOLIFK, M.,1983.
15. Filin, V. P., Fomin, N. A.: *The basics of youth sports*. Moscow. Fizkul'tura i sport,1980.