Scientific and pedagogical foundations of selection criteria for young weightlifters and their impact on the effectiveness of sports training

Berdimuratova Janigul Jaksimurat kizi [1]

[1]Uzbekistan state university of physical education and sport Nukus branch
Nukus city, Karakalpakstan

Abstract

Purpose: To provide scientific substantiation of theoretical approaches to finding young talented athletes for sports schools.
Methods: - Analyze domestic and foreign literature on the athlete selection system;
- Identify new talents in young athletes based on the study of modern selection criteria;
- Implement modern selection criteria in practice.
Results: Generally, the onset of puberty is considered early if the first signs appear in girls at 8-9 years old and in boys at 10 years old. Puberty is considered average if the first signs begin in girls at 10-11 years old and last for 5-6 years, and in boys from 12-13 years old to 18 years old. If the first signs appear after 13 years old in girls and at 15 years old in boys, the process is considered delayed.
Conlcusion: In seasonal sports, this includes, for example, pull-ups, standing long jumps, hand dynamometry, and others. The results of such tests cannot serve as a criterion for an athlete's potential. Indicators of physical qualities can be useful in selecting children for certain sports. Data on physical qualities obtained after engaging in sports for one or more periods will be useful in solving the tasks of the subsequent stages of selection.

Keywords: selection, young talents, sports selection, long-term training, selection and guidance.

Introduction

In the system of long-term training, the issue of athlete selection, their proper guidance, and determining selection criteria in sports is of great importance in world practice. In particular, one of the urgent tasks is to develop effective methodological guidelines and recommendations for national sports schools based on scientific research and practical experience of highly qualified specialists working in our country, as well as in countries where weightlifting is widely developed, such as the USA, Russia, Iran, China, and South Korea.

Today, systematic work is being carried out in our country to identify young people with innate abilities and talents in sports, develop their natural talent, and form a generation capable of achieving great success in sports. The process of selecting young people with a strong desire for sports, who are physically and spiritually developed, and have the potential to develop as professional athletes is also supported at the state policy level.

Results and discussion

Starting from September 2021, a 2-month pedagogical experiment was conducted to achieve the research goal.

The experimental work was carried out with groups of young weightlifters at the initial training stage of the Chirchik Children's and Youth Sports School. At the end of the two-month experimental period, control exercises and competitions were conducted to determine changes in the athletes' physical fitness levels. Three training sessions were planned in the weekly cycle.

The process of selection and guidance is closely related to the system of long-term improvement of athletes' skills. Therefore, it is advisable to distinguish five stages of the selection process to assess whether an athlete can perform the assigned tasks at a specific stage. Each stage has its own specific tasks, methods, and criteria, through which objective and accurate conclusions can be drawn.

For example, while the main focus in the first stage is on the anthropometric and morphological indicators of athletes, in the final - fifth stage, these factors are almost insignificant. At this stage, the main criteria are the results achieved by the athlete, the volume and nature of workloads, psychological state, social conditions, and the reasons for continuing sports activities.

Thus, the selection and orientation process is supported by various studies that allow obtaining comprehensive information about the athlete.

- health status and level of physical development;
- body structure;

- characteristics of biological maturity;
- characteristics of the nervous system;
- functional capabilities and prospects for the development of vital body systems;
- level of athletic skill and the ability to apply it in extreme conditions characteristic of important competitions.

A remarkable feature of genes is their inheritance (immutability) from generation to generation and simultaneous susceptibility to mutations - hereditary changes that are the source of the organism's genetic variability. Thus, for sports selection and orientation, it is important to determine the genotype of the athlete's organism to identify prospects for achieving sports results in the future. In particular, it is crucial to determine the inheritance of morphofunctional traits of a person, indicators of motor functions, the influence of genotype on human qualities, and the presence of family similarities in the ratio of these indicators.

Numerous studies conducted over the past decades have shown that genotype, as an organism trait formed under the influence of heredity and environment, has a significant influence on the formation of an athlete's phenotype. The data presented in the table below can provide a general overview of the inheritance of morpho-functional traits and motor qualities in humans.

An important part of the selection process is the comparison of biological ages. It is known that the difference between children of the same passport age depends on the speed of their physical maturation. Experience in sports schools' activities shows that sometimes biologically rapidly developing children pass the selection, but they quickly lose their advantages and end their sports careers early.

The following tables present the normative test criteria for admitting young weightlifters to sports schools and Olympic reserve colleges (Tables 1-4).

Table 1 Standard criteria for determining physical fitness in the admission (selection) of young people to weightlifting sports schools

Age	Score	Running 60 meters (sec.)	Standing long jump (cm)	Pull-ups on a horizontal bar (times)	Push-ups (times)	Back strength measurement using a dynamometer (kg)	Right hand strength measurement (kg)	Left hand strength measurement (kg)
10	5	9.0	160	3	12	60	15	13
	3	9.6	130	2	10	48	13	11
11	5	8.8	180	4	16	80	17	15
	3	9.3	150	2	12	54	15	13
12	5	8.6	190	5	18	90	19	18
	3	9.1	160	3	10	66	17	16
13	5	8.4	205	5	20	105	22	20
	3	9.0	175	3	12	72	20	18
14	5	8.2	215	6	25	124	28	25
	3	8.8	190	4	15	84	26	23
15	5	8.0	230	7	30	142	32	28
	3	8.6	200	6	17	95	30	26
16	5	7.9	245	8	35	152	37	35
	3	8.4	210	6	20	108	35	33

Generally, the onset of puberty is considered early if the first signs appear in girls at 8-9 years old and in boys at 10 years old.

Puberty is considered average if the first signs begin in girls at 10-11 years old and last for 5-6 years, and in boys from 12-13 years old to 18 years old. If the first signs appear after 13

Table 2 General physical fitness test standards for students entering Olympic reserve colleges for weightlifting

No	Standards	Score															
		6 points				4 points				2 points				1 point			
		12 years old	13-14 years old	15-16 years old	17 years old	12 years old	13-14 years old	15-16 years old	17 years old	12 years old	13-14 years old	15-16 years old	17 years old	12 years old	13-14 years old	15-16 years old	17 years old
1	30 m sprint (seconds)	4.7	4.6	4.5	4.4	4.9	4.7	4.5	4.3	5.1	4.9	4.7	4.5	5.3	5.1	4.9	4.7
2	Hanging on a horizontal bar forming a 90° angle (seconds)	17	19	21	23	15	17	19	21	13	15	17	19	11	13	15	17
3	Pull-ups on horizontal bar (repetitions)	12	15	17	19	10	12	14	16	8	10	12	14	6	8	10	12
4	Standing long jump (cm)	210	220	235	245	200	215	225	235	190	200	210	215	170	180	190	200
5	1000 m run (minutes)	4.2	4.0	3.8	3.6	4.4	4.2	4.0	3.8	4.6	4.4	4.2	4.0	4.8	4.6	4.4	4.2

Note: The maximum score for assessing students' overall physical fitness is 30 points.

years old in girls and at 15 years old in boys, the process is considered delayed. According to many researchers

(**Platonov V.N.**, Sergiyenko L.P.), 15-20% of children aged 11-13 experience accelerated physical development. They surpass their peers in height, weight, muscle development, and mobility indicators, and especially in their ability to master sports techniques. Although these differences are not substantial - 2-4% compared to normally developing children and 4-8% compared to less developed children - they have a significant advantage in terms of training volume and performance levels.

In the initial stages of selection, it is crucial to consider psychological indicators of aptitude for sports activities. The main psychological indicators in initial selection include enthusiasm for engaging in sports, aspiration to achieve high scores while performing exercises, determination and diligence, and fearlessness when performing unfamiliar exercises.

Table 3 **Physical fitness criteria for young weightlifters at various stages of training**

Group name	Training year	Score	60 m sprint (sec)	Standing long jump	Standing high jump	Pull-ups (repetitions)
Initial training group	I	5	8.4	205	85	7
		4	8.7	190	77	6
		3	9.0	175	70	5
	II	5	8.2	215	90	9
		4	8.6	200	85	8
		3	8.8	190	80	7
Training group	I	5	8.0	230	95	10
		4	8.4	215	93	9
		3	8.6	200	90	8
	II	5	7.9	245	100	12
		4	8.1	225	97	11
		3	8.4	210	95	10
	III	5	7.7	260	110	14
		4	7.8	240	105	13
		3	8.2	220	100	12
Sports improvement group	I	5	7.6	270	115	15
		4	7.8	245	110	14
		3	8.0	225	105	13

Table 4 **Model characteristics of the snatch result relative to the back squat with barbell, in %**

Athlete's weight category, kg	Age and sports qualification	Grade			
		excellent	good	satisfactory	unsatisfactory
32-36	10-11, beginner	More than 88	81-88	75-80	Less than 75
	12-13, 3rd rank	More than 83	78-83	73-77	Less than 73
	14-15, 2nd rank	More than 74	72-74	68-71	Less than 68
	16-17, 2nd-1st rank	More than 75	71-75	66-70	Less than 66
40-44	10-11, beginner	More than 70	65-70	60-64	Less than 77
	12-13, 3rd rank	More than 77	72-77	68-71	Less than 82
	14-15, 2nd rank	More than 74	68-74	63-67	Less than 85
	16-17, 2nd-1st rank	More than 75	70-75	65-69	Less than 80
49-55	10-11, beginner	More than 80	75-80	70-74	Less than 60
	12-13, 3rd rank	More than 85	80-85	75-79	Less than 68
	14-15, 2nd rank	More than 90	86-90	82-85	Less than 63
	16-17, 2nd-1st rank	More than 92	88-92	84-87	Less than 65
61-67	12-13, 3rd rank	More than 72	68-72	64-67	Less than 64
	14-15, 2nd rank	More than 79	74-79	70-73	Less than 70
	16-17, 2nd-1st rank	More than 77	72-77	68-71	Less than 68
73-+73	12-13, 3rd rank	More than 80	75-80	71-74	Less than 71
	14-15, 2nd rank	More than 75	70-75	65-69	Less than 65
	16-17, 2nd-1st rank	More than 77	72-77	68-71	Less than 88

Conclusion

It should be emphasized that in initial selection, relying solely on physical qualities is less effective. These qualities are primarily unstable, dependent on training influences, and considered secondary in the selection process. Conducting non-specific tests during initial selection, sometimes employed by less qualified coaches, is entirely ineffective.

In seasonal sports, this includes, for example, pull-ups, standing long jumps, hand dynamometry, and others. The results of such tests cannot serve as a criterion for an athlete's potential. Indicators of physical qualities can be useful in selecting children for certain sports. Data on physical qualities obtained after engaging in sports for one or more periods will be useful in solving the tasks of the subsequent stages of selection.

The decision to involve a child in a particular sport should be made not based on one or two indicators, but on a comprehensive assessment of all criteria.

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AUTHOR BIOGRAPHY:



Janigul Jaksimurot kizi BERDIMURATOVA

Employment
Uzbekistan state university of physical education and sports Nukus branch

Degree
MD

Research interests
weightlifting , Physical education and sport, Theory of physical education, Analyzing of sport competitions

E-mail: janigul.iw@mail.uz