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FEATURES AND VARIABILITY OF JUMPING TECHNIQUES OF LEADING UZBEK HIGH JUMPERS

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Annotation

The research included the improvement of the method for controlling the special readiness of the high jumpers. The technique included the analysis of the kinematic parameters of the jump. The technique was tested by the authors in the process of working as part of an integrated scientific group with the leading jumpers and jumpers of Uzbekistan. A significant variability was found in the technical readiness of the leading high jumpers (women and men) in terms of various kinematic parameters. In addition, there are significant differences in the technical readiness of athletes. At the same time, the generally accepted division into groups according to the principle of the related structure of technical readiness in the high jump has not yet been carried out. It is expedient in the near future to develop new models of special readiness for high jumpers, and on their basis model characteristics of technical and special physical readiness.

Keywords: high jumpers, athletes, indicators, special readiness, control, variability, model characteristics, jumping technique.

Introduction

The development of sports science is on the way to finding the general features of human activity in the process of motor activity[3,6]. But in order to successfully implement this regularity in the practice of the training process, it is necessary not only to know the general laws, but also to take into account the individual characteristics of each athlete. General methodological rules that have a positive effect on participants in a large group do not always justify themselves in an individual approach [2, 9]. The practice of sports shows that during training, many talented athletes left the sport without disclosing their abilities

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due to the use of a general training system that does not take into account personal motor skills, functional reserves and levels of special training [1, 11]. Differences in the natural abilities of athletes and the development of certain motor skills, the individual nature of the training of high-level athletes cause significant differences in the composition of special training of athletes at the stage of high sportsmanship [1,4,7,8]. Differences in the jumping technique of athletics have been noted by a number of experts [5,10,12]. Quantitative indicators of the variability of the parameters of technical training, based on the methods of jumping in the "fosbury-flop" method, the characteristics of the technique of high-altitude jumpers are rarely presented in the scientific and methodological literature.

Material and Methods:

To study the differences in the technical training of highly qualified high jump athletes. The research methodology includes filming films using video analysis using Dartfish software. Video recording was done by two digital video cameras mounted on tripods. The first camera (30 k / s) was mounted parallel to the plane of the bar, the second (120 k / s) was rotated and recorded the athlete's movements during the jump. The research was conducted at the championships of Uzbekistan in 2018-2020 in Tashkent. It was attended by the strongest high jumpers of Uzbekistan (5 athletes who have reached the level of HTSU and SU).

Result and Discussion

Using video recording and video analysis, the parameters of the technical training of the jumpers in the competition attempts were determined. The Fosbury-flop method, which demonstrates different variants of the jumping method and achieves the same result in the high jump in the studied attempts (1.80 m), has important indicators of variability of technical training parameters (coefficient of variability, Table 1) (n = 5) high jump athletes participated. The variability of the indicators of technical training of athletes was as follows (Table 1):

- Moderate Speed Activity: 5,6%;
- Rhythm and Tempo Indicators: 10,0%;
- Depsinishdagi Tayanch Vaqti: 11,0%.

Athletes who show the same result in high jump have significant differences in technical training, and the individual parameters of jumpers differ significantly

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from the average for these highly qualified athletes. Our previous conclusion about the significant differences in the methods by which athletes achieve results at the stage of high sportsmanship is confirmed [9].

This conclusion was confirmed by a comparative analysis of the technical training of the strongest jumpers of the last Olympic cycle, who demonstrated different methods of high-strength jumping (S. Radzivil) and "fast" (N. Dusanova) - Athletes in technical training parameters in the attempts studied have significant differences (Table 2):

-Average rate of activity: 21,0%;

- Speed in the last step: 10,7%;

- Base time for depressing: 8,1%.

Jumpers who use the “fast” high jump method will result in higher speeds and the speed of their final steps, a decrease in cushioning in the depressing leg joints, and a reduction in depressing time. The athlete makes efficient use of his or her speed and flight speed, directing the force to depress as little time as possible in the base position.

In the “power” mode of jumping at low running speeds, the jumper performs an active depressing - this is manifested by serious preparation for the descent (knee flexion angle); deep cushioning (knee and joint flexion) occurs in the joints of the running leg; depressing time increases. The athlete is most active during depressing as he shifts his horizontal speed to vertical speed to make better use of his strength.

Table 1. Average indicators and indicators of variability of technical training of highly qualified high jumpers in jumping 1.80 m (n = 5)

№	Indicators	Average (middle)	Standard deviation	The coefficient of variability
1.	The result of the competition, m	1,80	0	0,0
2.	**Speed in the last step, m / s**	6,61	0,37	5,6
3.	Step 4 tempo rate, q./s	2,27	0,38	16,7
4.	Speed of step 3, q./s	2,56	0,35	13,7
5.	Step 2 tempo rate, q./s	3,02	0,49	16,2
6.	Speed of last step tempo, q./s	3,71	0,53	14,3
7.	Average tempo activity (last 3 steps) q / s	3,10	0,31	10,0
8.	Base time in depressing, sec.	0,182	0,02	11,0
9.	Bending angle of the knee during the last step damping, degree	130,1	8,9	6,8
10.	Angle of stepping, degree	49,2	2,3	4,7
11.	**Bending angle of the knee joint during depreciation, degree**	146,8	12,4	8,4
12.	Angle of bending of the pelvic joint during depreciation, degree	139,7	9,1	6,5

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Table 2 Comparative analysis of technical training of highly qualified female athletes (N. Dusanova and S. Radzivil) in the 1.90 m high jump

№	Indicators	Athletes			
		N.Dusanova	S.Radzivil	difference	contrast %
1.	The result of the competition, m	1,90	1,90	0	0,0
2.	Speed in the last step, m / s	6,98	6,23	0,75	10,7
3.	Step 4 tempo rate, q./s	2,44	1,97	0,47	19,7
4.	Speed of step 3, q./s	3,09	2,08	1,01	32,7
5.	Step 2 tempo rate, q./s	3,25	2,86	0,39	12,0
6.	Speed of last step tempo, q./s	4,39	3,54	0,85	19,4
7.	Average speed activity (last 3 steps) q / s	3,58	2,83	0,75	21,0
8.	Base time in depressing, sec.	0,174	0,188	0,014	8,1
9.	Bending angle of the knee during the last step damping, degree	129	127	2	1,6
10.	Angle of stepping, degree	51	50	1	2,0
11.	Bending angle of the knee joint during depreciation, degree	152	143	9	5,9
12.	Angle of bending of the pelvic joint during depreciation, degree	141	134	7	5,0

A similar picture is observed in men who jump high. Significant differences were observed in the technical training of two qualified athletes, who demonstrated different methods of high jump, and athletes who showed the same result in the studied attempts (2.10 m). (Table 3):

- Average rate of activity: 19.2%;
- Speed in the last step: 4.9%;
- Base time for depressing: 42.5%.

Comparative analysis of technical training of highly qualified jumpers - men (D. Melsitov and A. Seitadjiev) in jumping to a height of 2.10 m

№	Indicators	Athletes			
		D.Melsitov	A.Seytadjiev	defference	contrast,%
1.	The result of the competition, m	2,10	2,10	0	0,0
2.	Speed in the last step, m / s	7,74	7,36	0,38	4,9
3.	Step 4 tempo rate, q./s	3,33	2,29	1,04	31,2
4.	Speed of step 3, q./s	3,46	2,96	0,5	14,5
5.	Step 2 tempo rate, q./s	4,55	3,44	1,11	24,4
6.	Speed of last step tempo, q./s	4,82	3,97	0,85	17,6
7.	Average tempo activity (last 3 steps) q / s	4,28	3,46	0,82	19,2
8.	Base time in depressing, sec. .	0,134	0,191	0,057	42,5
9.	The last step during the amortization knees buckling degree angle	135	104	31	23,0
10.	Angle of stepping, degree	49	47	2	4,1
11.	Bending angle of the knee joint during depreciation, degree	160	137	23	14,4
12.	Angle of bending of the pelvic joint during depreciation, degree	161	140	21	13,0

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- The study of the competitiveness of athletes in national competitions showed that there are significant differences in the technical training of athletes of the same category, which in some kinematic indicators amounted to 37-43%.

Relying on special physical training, highly qualified athletes form an individual technical method of competitive exercises and achieve high results in different methods of jumping, the difference in individual indicators of technical training is about one and a half times. V.N. Platonov points out that there are a variety of ways to achieve a competitive result at the stage of high sportsmanship, and that athletes strive for success through the formation of individual techniques based on the strengths of special training. High variability in the parameters of technical training of jumpers and highly qualified jumpers, who achieved almost the same result in the competition, in the analysis of the variability of special training of athletes in other sports, high individualization of ways to achieve a competitive result by athletes confirms the conclusion. This is explained by the natural tendency of athletes to develop certain motor skills, as well as significant variability in the volume and intensity of exercise on the macrocycle, as well as previous experiences of many years of training. Important indicators of the variability of technical training parameters for athletes, which characterize the deviation from the average statistics for this category of athletes, prove the ineffectiveness of the use of average models in the management of the training process of athletes at the stage of high sportsmanship indicates the need to create. It should be noted that although the variability of the kinematic parameters of high jump technique is much higher than the variability of jumping technique, the division of jumpers into groups was justified in the 80s [1, 8], in high jump, the structural principle of technical training The division into groups has not yet taken place. Based on these positions, athletes can be divided into groups based on the predominance of certain motor skills during special physical training, to study the structure of the relationship between technical and special physical training of high jumpers, and to develop new models of technical training. development is expedient. The focus of technical training on the characteristics of the model in the training of athletes allows to differentiate high jumpers depending on the individual level and structure of individual training, and based on special qualities, increases the effectiveness of athlete training.

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Conclusion

1. There are significant differences in the technical training of leading highly qualified jumpers according to different kinematic parameters (result - 180 m, n = 5):
- moderate speed activity: 5,6%;
- rhythm and tempo indicators: 10,0%;
- base time in depressing: 11,0%.
2. A comparative analysis of the technical training of two leading high-altitude jumpers for 2018-2020. S. Radzivil and N. Dusanova showed significant differences in technical training in jumping at the same height (1.90 m):
- Moderate speed activity: 21,0%;
- Speed in the last step: 10,7%;
- Base time in depressing: 8,1%.

This shows that different height jumping techniques have been used by athletes to achieve results in competitions:

Similar results When comparing the technical training of two leading athletes (D. Melsitov and A. Seytadjiev) at the same height (2.10 m), the differences in their technical training were as follows:
- Moderate speed activity: 19,2%;
- Speed in the last step: 4,9%;
- Base time in depressing: 42,5%.

3. Although the variability of the kinematic parameters of high-level jumping techniques is much higher than the variability in jump performance, the intergroup division of jumpers was proven in the 80s. It is important to make this division based on the jumping technique and qualifications of the athletes. In the near future, it is recommended to develop new models of special training for jumpers.

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