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STUDYING THE LEVEL OF TECHNICAL PREPARENESS INDICATORS OF HIGHLY QUALIFIED 400M HURDER RUNNERS

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ABOUT ARTICLE

Abstract: In this article, the author presents the results of a pedagogical study of the qualifying, as well as the final race of the Uzbekistan Championship, 400m hurdles runner using such methods as: instrumental method of measuring running speed and passing distance segments and the use of digital technology video analysis to identify technical errors performed before the attack barrier, over the barrier and leaving the barrier. The results of the research can be useful to both coaches and specialists preparing 400m hurdlers.

INTRODUCTION

Today, the 400m hurdles race is gaining immense popularity among those involved in athletics, and therefore the system of training world-class hurdlers is being improved. But, unfortunately, the athletes of Uzbekistan performing in this discipline cannot provide worthy competition in the international arena, which is an urgent problem in the holistic system of training highly qualified hurdlers. This pushes athletics specialists to search for new, more rational ways to develop and further improve the system of training athletes, functional systems and technical readiness of qualified 400 m hurdlers in Uzbekistan.

Hurdling is an excellent way to improve a person's coordination and achieve high motor skills. The 400m hurdles is one of the most technically challenging athletics events.

In order to achieve the set goals, it is necessary to improve and organize on a scientific basis the training system for 400 m runners. Today, this is one of the most important tasks in the development and popularization of athletics in Uzbekistan.

The 400 m hurdles race is one of the most technically difficult types of athletics requiring high coordination, consistency of motor actions, a high level of speed-strength readiness and a high level of technical skill in overcoming barriers. At the same time, it is important that hurdlers run the running segments between barriers throughout the entire distance without reducing their running speed. An important reserve for increasing results in hurdles is further improvement of technical training.

Purpose of the study: increasing the performance of female runners in the 400 m hurdles based on correction of their technical readiness indicators.

Research objectives: to achieve the goal of this work, the following tasks were identified:

- analysis of the means and tactics of running 400 m hurdlers and the 400 m smooth distance, according to the experience of leading coaches, as well as the collection of scientific, methodological and special literature.

- to study the features of technical readiness indicators of 400 m hurdles runners in competitive activities.

Research methods. To solve the problems, the following research methods were used:

- study of competition documentation (protocols, competition regulations, application sheets, compare the results of application sheets with the actual results of the final of the Uzbek Championship in the 400 m hurdles);

- pedagogical experiment of 24 runners in the 400 m hurdles. A comparative analysis of the results of the races and the final was carried out. Between the races and the final, the rest interval was 4 hours; this state of the athletes determines their speed endurance and level of speed-strength readiness.

- running timing;

- The instrumental research method used a sports stopwatch "GX120" to determine the running distances when passing each barrier.

-methods of mathematical statistics, all obtained research data were processed by the method of mathematical statistics and the difference between the results of the races and the final was revealed by Student's t-test at a confidence level of $p \leq 0.05$.

Organization and methods of research. This study was conducted at the Uzbekistan Championships in Tashkent at the stadium of the Uzbekistan Athletics Federation.

Table 1

Technical skill of hurdlers

Name and Surname	Result in smooth running, 400m. sec	Result in hurdles, 400m sec	Runner's technicality, sec
О-ва Н.	57.29	1.01.19	3.90
Л-ва В.	57.43	1.01.39	3.96
Хо-ва Х.	59.20	1.04.20	5.00
И-ва М.	58.65	1.05.72	7.07
А-ва Д.	59.67	1.05.79	6.12
Р-ва Н.	59.90	1.05.87	5.97

Table 2

Dynamics of indicators of technical readiness of 400 m hurdlers O-voy N, L-voy V, A-voy D, R-voy N, I-voy M, X-voy X, at the Open Championship of Uzbekistan 8-11.06. 2023

Indicators of 400 m hurdles running technique	О-ва Н.		Л-ва В.		Х-ва Х.		И-ва М.		А-ва Д.		Р-ва Н.	
Time to 1 barrier and between next barrier	6.99	4,80	6.91	4.93	7.11	4.93	6.68	5.72	7.12	5.22	7.16	5.14
Time to 2nd barrier and between next barrier	11,80	4,94	11.84	4.92	12.10	5.01	12.41	5.37	12.34	5.18	12.30	4.96
Time to 3rd hurdle and between next hurdle	16,75	5,08	16.76	4.76	17.12	5.15	17.78	5.06	17.53	5.10	17.26	5.17
Time to 4th hurdle and between next hurdle	21,83	5,57	21.53	5.32	22.27	5.18	22.85	5.57	22.63	5.45	22.43	5.51
Time until the 5th barrier and between the next barrier	27,03	5,57	26.85	5.05	27.46	5.61	28.42	5.77	28.09	6.23	27.94	6.18
Time until the 6th barrier and between the next barrier	32,61	5,22	31.91	5.53	33.07	5.85	34.19	6.07	34.32	5.60	34.12	5.39
Time until the 7th barrier and between the next barrier	37,83	5,86	37.44	5.43	38.93	5.48	40.26	6.27	39.93	6.04	39.51	6.19
Time until the 8th barrier and between the next barrier	43,70	5,56	42.87	5.61	44.41	6.22	46.54	5.95	45.97	6.11	45.70	6.31
Time until the 9th barrier and between the next barrier	49,27	5,27	48.48	5.99	50.63	6.02	52.49	5.96	52.09	6.12	52.01	6.26
Time until the 10th barrier and between the next barrier	54,54	6,65	54.48	6.91	56.65	6.02	58.45	7.27	58.21	7.58	58.27	7.60
First 300 meters time	45,26		44.43		46.06		47.59		47.33		47.11	
First 200 meters time	28,83		28.61		29.13		30.27		29.91		29.74	
Time of the second half of the distance	32,36		32.78		35.07		35.45		35.88		36.13	
400m hurdles time	1.01.19		1.01.39		1.04.20		1.05.72		1.05.79		1.05.87	

400m time (smooth course)	57.29	57.43	59.20	58.65	59.67	59.90
Time difference between 400m and 400m hurdles	3.90	3.96	5.00	7.07	6.12	5.97
First 100 meters time	14.39	14.40	14.73	15.01	14.95	14.90
Last 100 meters time	15.93	16.46	17.91	18.13	18.46	18.76

Research results: Based on the results of a pedagogical study of the level of technical preparedness of a 400 m hurdler, the following was revealed:

1. In the qualifying races, the results of the 400 m hurdler N.O-voy, it was revealed that the speed of overcoming barriers is higher, in the final race by 0.93 seconds, while V.L-voy's time spent on overcoming barriers is the race was better than in the final race by 0.37 seconds. And the difference between the participants in the final race was 3.90 seconds, while V.L.'s time for overcoming barriers was 3.96 seconds. The difference between them was 0.06 seconds in favor of N.O. For runner X.X-voy, the time spent overcoming barriers was exactly 4.39 seconds in the race, and in the final this figure was 5.00 seconds, the difference between the final and the race was 0.61 seconds. It is necessary to take into account that this participant's speed endurance indicators are higher than those of the previous two participants. During the video analysis, it was revealed that the technical skill of overcoming barriers in the qualifying and final races, the difference between N.O-va and Kh.Kh-va is 1.10 seconds in favor of N.O-va, the difference between V. Loginova and Kh .X-how is 1.04 seconds in favor of V. Loginova. Runner N.R-va spent 5.34 seconds to overcome barriers along the distance in the race, and in the final this figure was 5.97, the difference between the final and the qualifying race was 0.63 seconds, but the difference in time was 2.07 seconds between N.O-voy and N.R-voy in favor of N.O-voy, the difference is 2.02 seconds between V.L-voy and N.R-voy in favor of V.L-voy, the difference is 0.97 seconds between H.H-voy and N.R-voy in favor of H.H-voy. It took runner D.A-voy even more time to overcome barriers, where the time in the race was 5.92 seconds, and in the final this figure was 6.12 seconds, the difference between the race and the final was 0.20 seconds, a difference of 2 ,22 seconds between N.O-voy and D.A-voy in favor of N.O-voy, the difference is 2.18 seconds between V.L-voy and D.A-voy in favor of V.L-voy, the difference at 1.12 seconds between H.H-voy and D.A-voy in favor of H.H-voy, a difference of 0.15 seconds between N.R-voy and D.A-voy in favor of N.R-voy .

The longest time required for the technique of overcoming all barriers along the distance in the race was runner M.I. 6.89 seconds, and in the final this figure was 7.07 seconds, the difference between the final and the race was 0.16 seconds, the difference was 3.17 seconds between N.O-voy and M.I-voy in favor of N.O-voy, a difference of 3.12 seconds between V.L-voy and M.I-voy in favor of V. Loginova, a difference of 2.07 seconds H.H-voy and M.I-voy in favor of H.H-voy, difference

of 1.10 seconds between N.R-voy and M.I-voy in favor of N.R-voy, difference of 0.95 seconds between D.A-voy and M.I-voy in favor of D.A-voy. The running speed of N.O-voy is higher than that of V. Loginova by 0.14 seconds with the result of 57.29 seconds for N.O-va and 57.43 seconds for V.L-va. In the smooth 400 m run, M.I-voy has 58.65 seconds, she is inferior in speed to only two runners: N.O-voy by 1.36 seconds and V.L-voy by 1.22 seconds, but wins over the remaining three hurdlers girls in the distance with a difference in their favor of 0.55 for Kh.Kh-voy, 1.02 seconds for D.A-voy, 1.25 seconds for N.R-voy. Runner Kh.Kh-va covers the smooth 400m distance in 59.20, losing by 1.91 seconds to N.O-voy, by 1.77 seconds to V. Loginova, by 0.55 seconds to M.I-voy, but wins on her own advantage over D.A-voy by 0.57 seconds, and over N.R-voy by 0.70 seconds. With a result of 59.67 seconds D.A-va, inferior to N.O-voy by 2.40 seconds, V. Loginova by 2.24 seconds, M.I-voy by 1.02 seconds and X by 0.47 seconds .X-howl, but reaches the finish line 0.37 seconds faster than N.R-va. Runner N.R-va finishes with the sixth result in time, 59.90 seconds behind the leader in the race N.O-voy, by 2.47 seconds in favor of V.L-voy, by 1.25 seconds in favor of M .I-voy, by 0.7 seconds in favor of H.H-voy, and the least difference in time is 0.23 in favor of D.A-voy.

2. When analyzing running speed in the first 100 m in the 400 m hurdles, N.O-va showed the best time with a result of 14.39 seconds, while V.L-va showed 14.40 seconds and then Kh.H- va showed 14.73 seconds, then with a small gap in time N.R-va covers this distance in 14.90 seconds, followed immediately by D.R-va with a result of 14.95 seconds and runs this distance M.I-va in 15.01 seconds, behind everyone else. The difference between the athletes is 0.01 seconds between N.O-voy and V.L-voy in favor of N.O-voy, 0.34 seconds between N.O-voy and Kh.H-voy in favor of N.O-voy howl and 0.33 seconds between V. Loginova and Kh.Kh-va in favor of V.L-va. The time lag in this segment of the runner N.R-voy in favor of N.O-voy is 0.51 seconds, by 0.17 seconds in favor of V.L-voy. Hurdler D.A-va, showing a result of 14.95 seconds, loses in time in favor of N.O-voy by 0.56 seconds, in favor of V.L-voy by 0.55 seconds, and in favor of N.R-voy only for 0.05 seconds. M.I-va is the slowest to overcome this segment with a result of 15.01 seconds, behind N.O-voy by 0.62 seconds, in favor of V.L-voy by 0.61 seconds, in favor of Kh.Kh-voy by 0.28 seconds, in favor of N.R-voy by 0.11 seconds, and in favor of D.A-voy by 0.06 seconds.

3. When analyzing the speed in running the first 200 meters of the 400m hurdles, V.L-va showed the best time with a result of 28.61 seconds, while N.O-va showed 28.83 seconds, Kh.H-va 29, 13 seconds, N.R-va 29.74 seconds, D.A-va 29.91 seconds, M.I-va 30.27 seconds. The difference between the athletes is 0.22 seconds between V.L-voy and N.O-voy in favor of V.L-voy. The difference is 0.72 seconds between H.H-voy and V.L-voy in favor of V.L-voy. The difference is 0.30 seconds between H.H-voy and N.O-voy in favor of N.O-voy. The difference is 1.13 seconds between V.L-voy and N.R-voy in favor of V.L-voy. The difference of 0.91 seconds between N.O-voy and N.R-voy is in favor of N.O-voy. The difference is 0.61 seconds between N.R. and H.H. in favor of

H.H. The difference is 1.30 seconds between V.L-voy and D.A-voy in favor of V.L-voy. The difference of 1.08 seconds between N.O-voy and D.A-voy is in favor of N.O-voy. The difference of 0.78 seconds between H.H-voy and D.A-voy is in favor of H.H-voy. The difference of 0.17 seconds between N.R-voy and D.A-voy is in favor of N.R-voy. The difference is 1.66 seconds between V.L-voy and M.I-voy in favor of V.L-voy. The difference is 1.44 seconds between N.O-voy and M.I-voy in favor of N.O-voy. The difference is 1.14 seconds between H.H-voy and M.I-voy in favor of H.H-voy. The difference is 0.53 seconds between N.R. and M.I. in favor of N.R. The difference of 0.36 seconds between D.A-voy and M.I-voy is in favor of D.A-voy.

4. When analyzing the speed in the 300m race at a distance of 400m hurdles, V.L-va showed the best time with a result of 44.43 seconds, while N.O-va showed 45.26 seconds, the difference is 0.83 seconds in favor of V.L-voy. Kh.H-va showed 46.06 seconds, being 1.63 seconds behind V.L-voy and 0.80 seconds behind N.O-voy. But Kh.Kh-va runs this distance faster than N.R-va by 1.05 seconds, by 1.27 seconds than by D.A-va and by 1.53 seconds than by M.I-va. N.R-va showed 47.11 seconds, leaving three runners ahead with a difference in their favor of 2.68 seconds for V.L-voy, 1.85 seconds for N.O-voy, 1.05 seconds for Kh.Kh. -howl, but N.R-va turns out to be faster than M.I-va by 1.53 seconds, and D.A-va by 1.27 seconds. D A-va, with a result of 47.33 seconds, lets four runners ahead, losing by 2.90 seconds to V.L-voy, by 2.07 seconds to N.O-voy, and by 1.27 seconds to Kh.Kh-voy. But he runs this segment faster by 0.26 seconds than M.I-va. M.I-va with a result of 47.59 seconds is inferior to all runners in their favor: by 3.16 seconds V.L-voy, by 2.33 seconds by N.O-voy, by 1.53 seconds by Kh.Kh-voy , by 0.48 seconds N R-voy, by 0.26 seconds D.A-ova.

5. When analyzing the last 100 meters from the 400m hurdles, N.O-va showed the best time with a result of 15.93 seconds, V.L-va showed 16.22 seconds, second only to N.O-voy by 0.29 seconds Kh.H-va showed a result of 17.91 seconds, leaving only two runners ahead, where the time difference was in their favor by 1.98 seconds N.O-voy, by 1.48 seconds V.L-voy, but faster than the rest runner in his favor by 0.22 seconds M.I-voy, by 0.55 seconds D.A-voy, by 0.85 seconds N.R-voy. M.I-va shows the fourth result in this section of the distance, losing to three runners: N.O-voy by 2.20 seconds, V.L-voy by 1.91 seconds, Kh.Kh-voy by 0.22 seconds, but overtaking two runners by 0.33 seconds D.A-vu and by 0.63 seconds N.R-vu. D.A-va with a result of 18.46 seconds is inferior to all runners: by 2.53 seconds N.O-voy, by 2.24 seconds by V.L-voy, by 0.55 seconds by Kh.Kh-voy, by 0 ,33 seconds M.I-voy, except for one N.R-howl for 0.30 seconds in favor of D.A-voy. N.R-va showed a result of 18.76 seconds, losing to all runners in the race by 2.83 seconds to N.O-voy, by 2.54 seconds to V.L-voy, by 0.85 seconds to Kh.H-voy, to 0.63 seconds M.I-howl, by 0.30 seconds D.A-howl.

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