

Current problems of running training of qualified track and field jumpers

UDC 796.431



PhD, Associate Professor **M.B. Salamatov**¹

¹The Russian University of Sport «GTSOLIFK», Moscow

Corresponding author: mixail.salamatov@bk.ru

Received by the editorial office on 11.04.2024

Abstract

Objective of the study was to identifying current problems in the running training of highly qualified track and field jumpers specializing in the running triple jump, identifying areas for improvement in this jumping discipline.

Methods and structure of the study. A survey of the competitive activity of track and field jumpers in four jumping disciplines for men and women was carried out at all-Russian competitions in the period 2003-2023. Highly qualified jumpers and jumpers (6 athletes in each jumping discipline) took part in the study.

Results and conclusions. After conducting a survey of the competitive activity of leading Russian triple jumpers with registration of the speed parameters of the run-up sections, as well as the implementation of the run-up speed indicators in the support-flight part of the jump, it was concluded that among jumpers, running and technical training in the run-up phase are the main problem limiting the growth of sports jumper skills.

An analysis of the competitive activity of leading Russian triple jumpers showed that low speed in the last section of the run-up, which is a consequence of imperfect running structure and technical training in the run-up phase, is the main problem limiting the growth of sportsmanship in this jumping discipline of athletics.

Keywords: *athletics, triple jump, long jump, highly qualified track and field jumpers, running training.*

Introduction. The Russian jumping school continues the glorious traditions of the Soviet track and field jumping training system, marked by numerous victories in the Olympic arenas and the setting of many world records. Russian track and field jumpers continue the glorious traditions established by outstanding jumpers and vaulters of the Soviet period [1].

The undoubted successes of Russian jumpers in recent years in the high jump and women's pole vault cannot cover the obvious problems that exist in horizontal jumps, where, after the end of their sports careers, the leaders - T. Lebedeva, T. Kotova, I. Simagina, L. Kolchanova, A. Pyatykh, D. Burken, I. Spasovkhodsky, it became clear that besides E. Sokolova, D. Klishina, A. Menkov, there are no worthy successors in these types, and the successes of the latter date back to 2012-2017 [3].

This study is devoted to identifying the reasons for the decrease in performance in one of the jumping

types of athletics - the triple jump, and determining the direction of improvement in this discipline.

Objective of the study was to identifying current problems in the running training of highly qualified track and field jumpers specializing in the running triple jump, identifying areas for improvement in this jumping discipline.

Methods and structure of the study. Scientific work included video recording of the athletes competitive activity with video analysis (DARTFISH software) and photodiode electronic timing of run-up sections in horizontal jumps (Smartspeed, Brower systems). A survey of the competitive activity of track and field jumpers in four jumping disciplines for men and women was carried out at all-Russian competitions in the period 2003-2023. Highly qualified jumpers and jumpers took part in it (6 athletes in each jumping discipline).

Results of the study and discussion. To solve in detail the problems of training track and field jumpers



and identify the reasons for the decline in the performance of Russian athletes in the last decade, the dynamics of the main indicators of the competitive activity of track and field jumpers specializing in horizontal jumps over a 20-year period was studied. As an example, an analysis of the indicators of competitive activity over the past period of the leading triple jumpers of the Russian Federation is given. The dynamics of the main average statistical indicators of the competitive activity of triple jumpers in the period 2003-2023 are presented in Table 1, as well as in the form of a graph in Figure 1.

The dynamics of the average competitive result of the first 6 finalists of the Russian Championships in the triple jump in the period 2003-2023 is presented in Figure 1. The regression equation reflecting the dynamics of the competitive result in the mens triple jump by year:

$$Y = -0,035X + 87,31, \text{ where}$$

Y – competitive result, m

X – years

During the study period, a significant decrease in the average result of the leading six finalists of the Russian Championship (CR) by 55 cm (3,3%) is associated with a drop in the speed indicator in the last run-up section of the finalists of the CR (2003 – 10,07 + 0,21 m/s, 2023 – 9,94 + 0,19 m/s, the difference was 1.3%), and with a decrease in the rate of speed implementation in the support-flight phases of the jump (Krs), which amounted to 1,8% (2003 – 1,70 + 0,03 m/s, 2023 – 1,67 + 0,04 m/s). The rate of increase in speed before take-off (the difference in speed in the last and penultimate 5th run-up sections) did not change significantly, and the average statistical indicator for male jumpers fluctuated around the model values for triple jump jumpers (+0,17 m/s), in the range of values from +0,13 to +0,23 (m/s).

Table 1. Average statistical indicators of competitive activity of jumpers-finalists of the Russian Championships in the triple jump in the period 2003-2023.

Years	CR	V6-11	V1-6	ΔV
2003	17,15	9,84	10,07	0,23
2008	17,25	9,92	10,15	0,23
2013	16,68	9,81	10,01	0,21
2018	16,60	9,68	9,81	0,13
2023	16,60	9,77	9,94	0,16

The dynamics of the speed indicator on the last 5th section of the runway in the triple jump (TJ) of male finalists at the Russian Championship in the period

2003-2023 is presented in Figure 2. The regression equation reflecting this dynamics:

$$Y = -0,0123X + 34,81, \text{ where}$$

Y – take-off speed, m/s

X – years

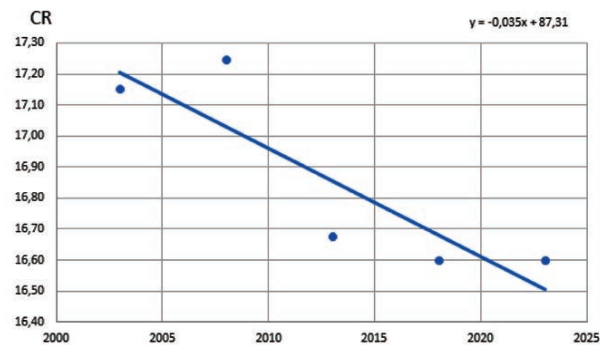


Figure 1. Dynamics of the average competitive result of the finalists of the Russian Championships in the triple jump in the period 2003-2023.

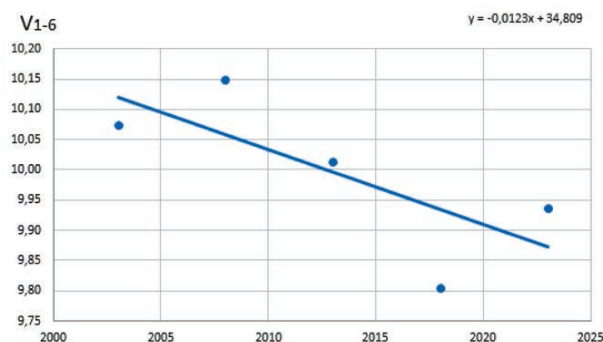


Figure 2. Dynamics of the run-up speed in the triple jump of finalists of the Russian Championships in the period 2003-2023.

A significant drop in performance in the triple jump among men over the past period is associated, first of all, with a drop in the speed indicator in the last section of the run before take-off [2]. The identified problem of low speed performance of leading Russian triple jumpers, which limits the competitive performance of athletes, undoubtedly requires an early solution, which is located both in the plane of sprint training of jumpers (insufficient speed preparedness of athletes) and in the plane of technical training (low implementation of speed readiness in speed take-off run, which for triple jumpers is only 94-95% of the maximum speed capabilities, while the model is 97-98%).

The irrationality of the structure of technical training in the macrocycle is proven by analyzing the dynamics of one of the main indicators of technical



readiness of jumpers, a triple one - an indicator of the increase in speed before take-off. This indicator is determined by the difference in speed in the last and penultimate 5-meter run-up sections using electronic photodiode timing (accuracy 0,001 s). Conducted studies of the competitive activity of the finalists of the All-Russian competitions showed that having negative parameters of the increase in speed before take-off (actual braking before the bar) at the beginning of the sports season (Team Championship in May), athletes only achieve model run-up indicators of 0,15 – 0,20 m/s by the end of the sports season (July-August).

The analysis of the special preparedness and competitive activity of triple jump jumpers over a long period allowed us to identify the main directions for improving the special technical preparedness of jumpers:

1. The effectiveness of the tempo version of the run with a rapid increase in pace and speed, which gives an advantage in speed by 2-3% compared to the run with a smooth increase in speed and active running up in the last 6-8 steps of the run. A «tempo» version of the run with a rapid increase in speed from the first steps (in a motor structure close to the starting run of sprinters, but from a high start) must be developed in young athletes already at the stage of initial specialization [4].

2. The next direction for increasing speed before take-off is to increase the length of the run-up - up to 21-24 run-up steps for male jumpers. A comparative analysis of the number of running steps among the finalists of the Russian Championship and the finalists of the World Championship showed that for our athletes this figure is lower than that of the best athletes in the world by approximately two steps – 18,5 and 20,5 running steps, respectively [6].

An increase in the efficiency of equipment is possible only with technical work at high speed, close to the maximum speed capabilities of the jumper. At the same time, increasing the take-off speed requires a certain restructuring of the take-off technique, and the entire jump as a whole [5].

For this purpose, the following technical training tools are used:

- increasing the take-off run with the inclusion of run-ups increased by 2-4 running steps, performed with and without push-off, this will make it possible to increase the stability and reliability of the run-up, and most importantly its speed parameters;

- increasing the percentage of fast running in the run-up structure. Particular attention should be paid to such means of running and technical training as sprint running with pushing through 5-7 running steps over segments of 60-100 m;

- increasing the speed qualities of jumpers will be facilitated by an increase in sprint training of running in the 96-100% MAX mode and an increase in competitive practice in sprint running.

3. The rational idea, in our opinion, is to shift the emphasis in sprint training to the early stages of long-term training with the target of achieving model run-up speed indicators by the end of junior age, at the stage of sports improvement. At the same time, it is advisable to focus the emphasis on the sprint training of triple jumpers at the stages of initial specialization and in-depth training with reaching model indicators of sprint readiness by the age of 19-20.

4. In technical training, in the early stages of long-term training, it is advisable to master the high-speed version of the triple jump technique with low trajectories of flight phases and a «jump-dominant» technique and an emphasis on the length of the «step + jump» combination.

Conclusions. An analysis of the competitive activity of leading Russian triple jumpers showed that low speed in the last section of the run-up, which is a consequence of imperfect running structure and technical training in the run-up phase, is the main problem limiting the growth of sportsmanship in this jumping discipline of athletics.

Directions for solving this problem have been identified based on improving both sprint training and the run-up phase:

- increasing the run-up length to 21-24 running steps;

- use of a rational «tempo» take-off option with a rapid increase in the speed and tempo of running take-off steps;

- an increase in sprint training for running in the 96-100% MAX mode, as well as an increase in competitive practice in sprint running;

- increasing the percentage of fast running in the run-up structure.

References

1. Mironenko I.N. Evolyutsiya tekhniki troynogo pryzhka. Legkaya atletika publ., 2018. No. 7-8. pp. 40-49.



2. Mironenko I.N. Saltologiya. Study guide. Voronezh, 2019. 167 p.
3. Ogandzhanov A.L., Mironov D.L., Salamatov M.B. Limitiruyushchiye faktory v spetsialnoy podgotovke vysokokvalifitsirovannykh legkoatletov-prygunov. Izvestiya Tuskogo gosudarstvennogo universiteta. Fizicheskaya kultura. Sport. 2018. No. 3. pp. 115-127.
4. Ogandzhanov A.L., Salamatov M.B. Metodicheskiye aspekty podgotovki v legkoatleticheskikh pryzhkakh. Study methodological guide. Moscow: Rossiyskiy universitet sporta «GTSOLIFK» publ., 2022. 118 p.
5. Ogandzhanov A.L., Salamatov M.B., Latypov I.K., Loktionov S.E. Sovershenstvovaniye tekhnicheskogo masterstva legkoatletov-prygunov na osnove issledovaniya ritmicheskoy struktury troynogo pryzhka. Teoriya i praktika fizicheskoy kultury. 2022. No.10. pp. 32-35.
6. Tsyplenkova E.S. Analiz fazy razbega v sorevnovatel'nom uprazhnenii vysokokvalifitsirovannykh legkoatletov-prygunov troynym. Zdorovye dlya vsekh. Proceedings IV International scientific-practical conference, Pinsk, 26-27 aprelya 2012 goda. Vol. II. Pinsk: Poleskiy gosudarstvennyy universitet publ., 2012. pp. 292-295.