

The Development Mechanism of Hammer Throwers Technique

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ABSTRACT

Throwing a hammer is a motor action that is difficult to coordinate and requires great physical strength from the practitioners. Therefore, teaching the technique of hammer throwing should be structured taking into account the peculiarities of physical development and motor experience of those involved.

KEYWORDS: *starting position, holding the projectile, preliminary rotations, turns, final effort.*

Relevance. The current state of development of hammer throwing is characterized by the fact that the overall level of the best competitive results among men has decreased and stabilized. The Russian school of throwing previously occupied a leading position in the world. The best results of the performance of the throwers-leaders of recent years are significantly inferior to the previous achievements. At the same time, a significant gap between the fitness of the leading athletes and those who make up the reserve group became apparent.

The main reasons for this situation are:

- lack of continuity in the activities of throwing specialists; weakening of motivation among domestic throwers due to increased competition in the international arena;
- problems of a material and technical nature and the loss of scientific support for the process of training throwers.

Methodological errors in the formation and improvement of the technique of this complexly coordinated type of athletics are obvious. With a sufficiently high level of physical readiness of modern throwers, it is necessary to search for new ways of managing technical readiness, both at the stage of motor skill formation and at the stage of sports perfection. The above circumstances determine the relevance of this study.

The object of research is the technical training of hammer throwers.

The subject of the research is the process of managing the technical training of hammer throwers of various qualifications.

The purpose of the study is the theoretical development and experimental substantiation of the algorithm for controlling the technical training of hammer throwers.

Hypothesis: it was assumed that taking into account the indicators of the hammer throwing technique, characterizing the movement in terms of the degree of their variability and the measure of influence on the result, would make it possible to establish the elements of the technique that represent its foundation and determine the prospect of its development. Analysis of the dynamics and correction of the parameters of throwing will contribute to a more effective impact on the movement during its formation and improvement.

Research objectives:

1. Determine and classify the level of variability of the kinematic indicators of the hammer throwing technique and the strength of their relationship with the result in throws of shells of different weights from three and four turns.
2. To develop, on the basis of the revealed combination of indicators, model characteristics of the hammer throwing technique.
3. To establish the peculiarities of using shells of non-standard weight as a means of enhancing the effectiveness of the impact on the hammer throwing technique during its improvement.
4. To develop methods for managing the technical training of hammer throwers at the stages of initial training and improvement of technology.

Scientific novelty. New quantitative characteristics of the kinematic and dynamic indicators of the main variants of the technique of highly qualified athletes were obtained, which made it possible to determine the mechanism of control of the formation and growth of technical skill as a result of specially directed training influences.

It has been established that the management of technical training of hammer throwers is based on the priority use of indicators that characterize the technique from the standpoint of the revealed cause-and-effect relationships of its elements with the result, combined with their variability, as a reference point in training with beginners and qualified athletes.

The theoretical significance of the work is due to the fact that as a result of the study, data were obtained that expand the understanding of the ways of managing the technical training of beginner hammer throwers and highly qualified athletes.

The practical significance is determined by the bias of the research topic. The developed methodology of initial training in hammer throwing technique was successfully introduced into the educational and training process in the preparation of students of higher educational institutions of physical culture, and the methodology aimed at correcting the technique of competitive movement contributed to an increase in the effectiveness of the influence of the main training influences and, as a consequence, to the growth of sports achievements among qualified throwers.

In the proposed approach to the formation of a motor skill at different stages of its developed there are two main features. One of them is the targeted distribution of the elements of the hammer throwing technique into groups. They are defined as "basic" - forming the basis of technology and "formative" - determining its effectiveness and development prospects. Another feature is the gradation of indicators that characterize the movement on a qualitative basis and their distribution according to criteria that reflect belonging to a particular group. The first criterion is the level of variability associated with the range of individual deviations. The second is the degree of influence on sports performance. Based on the synthesis of these measures, four groups of indicators of hammer throwing technique were formed, which are distributed according to their importance.

The first troupe includes indicators that are quite stable, and some change in them has little effect on the result. They characterize a relatively common technique common to all throwers. These elements of the technique are defined as "basic" and have a small range of individual deviations.

The second group includes indicators that are variable, but their change has little effect on the final result. They characterize the relatively individual basis of the technique. These elements of technology are also "basic", but they have a large individual variation.

The third group includes indicators that are quite stable, and some change in them strongly affects

the result. They are designated as "formative", characterize the accuracy of movement and determine the progress in the development of technical actions inherent in all throwers.

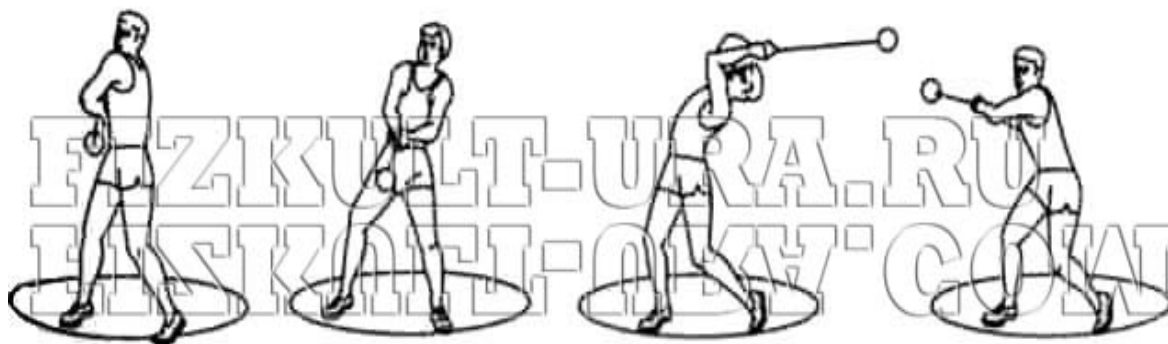
The fourth group includes indicators that are variable and their change greatly affects the result. They "shape" and determine the prospect of improving technology and have individual characteristics of manifestation.

Summarizing this approach, it should be stated that the "basic" elements are those that are included in the first and second groups of this classification. It is necessary to build on them in the process of initial training and bring it to automatism. In general, these are indicators of the angles between the leading motor links, which determine the "dynamic posture" of the thrower; indicators of two reference periods of turns and the speed of some of the main motor links when performing these elements of technology. Among other things, here in the phases of the preliminary acceleration of the projectile, the time and speed indicators of the links were noted when throwing from three turns, which is explained by the better automatism when accelerating the hammer, performed at a higher speed in this throwing method. It is also noted that the movement of the head is mainly of an individual nature, and the angle of interaction between the pelvis and the shoulders is quite constant, since the projectile "overtakes" is carried out mainly due to twisting in the lower links of the hammer-thrower system.

The methodology of motor skill improvement among qualified hammer throwers is based not only on well-known general didactic principles, but also on the principles of sports training. The technique has a number of distinctive features. Firstly, it is aimed at improving the elements of technology, which were previously defined as "forming" and determining its effectiveness and development prospects. At the same time, using the methodology, the correction of the "basic" indicators, which form the basis of the movement technique, is carried out. Secondly, for effective management of the technical training process, special modeling is used, taking into account the individual characteristics of the execution of movement elements when throwing in different styles - from three and four turns. Thirdly, projectiles of non-standard weight are used as means of correcting the throwing technique. They are used in different combinations during certain periods of training sessions. It is important to note here that the factor of oncoming fatigue at the end of the lesson is purposefully used to correct the throwing technique.

The hammer throwing technique can be divided into the following points that are convenient for analysis:

- holding the hammer;
- initial position and preliminary rotation of the hammer;
- turns of the hammer thrower (rotational-translational);
- final effort;
- braking.



Предварительное вращение молота

Holding the hammer. In order to avoid injury to the hand, the thrower is allowed to put a glove on his hand. He holds the hammer handle on the middle phalanges of four fingers, the other hand is placed on top, covering the hand, the thumb of this hand is pressed against the wrist of the lower hand, and the thumb of the lower hand is placed on top of this finger.



Hammer thrower turns. The purpose of all corners is acceleration. Moreover, the first turn is used for a smooth transition from preliminary rotations to rotational-translational movements in a circle, and the last one is used for a better execution of the final effort. Turning in is very important. In each of the subsequent turns, the angle of the plane of rotation of the hammer gradually increases, reaching 44° .

Conclusion:

Leading throwers of the country and the world are currently demonstrating the technique of performing the final effort without significant back bending of the trunk. Such a movement not only negatively affects the increase in the speed of the projectile, but also creates additional difficulties for maintaining the athlete's balance after the release of the hammer. In the final effort, as in the entire throwing process, the speed of the projectile increases due to some rotational movements, and its loss due to the extension of the body with an inclination back is not compensated by the translational movement. The effectiveness of the final effort entirely depends on the actions of the thrower preceding it in the process of performing preliminary rotations and turns with the hammer. The final effort is a kind of measure of the throwing technique as a whole, and its effectiveness can be judged by the stability of the thrower in a circle after the projectile is released.

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