

HAMMER THROW TECHNIQUE AND DRILLS

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The author discusses technique principles of the Soviet system and presents some unique drills and exercises, responsible for a monotonous production of world-class hammer throwers. The article is translated, slightly condensed, from Legkaja Atletika, Moscow, No.8, 1980. Re-printed with permission from Modern Athlete and Coach.

The development of modern hammer throwing technique has been based on the lengthening of the acceleration path of the hammer head, because it allows to increase the delivery velocity and consequently the distance achieved. The hammer path is lengthened by increasing the turning radius through bending of the hip joint and an inclination of the trunk (Fig.1). This allows to increase the radius by 26cm and the total path of acceleration up to 6.5m. For example, a 1.36m turning radius is responsible for a 8.54m hammer path in one turn and 34.16m in four turns. By increasing the radius to 1.62m, the hammer path lengthens to 10.17m in a single and 40.68m in four turns. This represents a difference of 6.52m and naturally allows the thrower to increase the release speed.

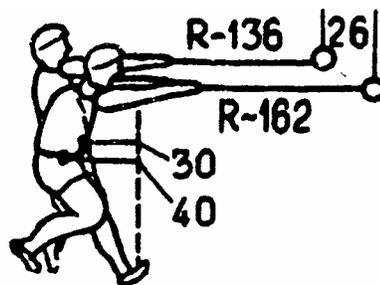


FIG. 1 LENGTHENING OF THE TURNING RADIUS.

Of course there are limits in attempting to increase the hammer path, as too much inclination will interfere with the delivery angle. It is therefore important to approach the lengthening of the hammer path sensibly, making adjustments according to individual ability and keeping in mind the principles of hammer throwing technique.

LEARNING DRILLS

Specific exercises and drills form an important part in the training of hammer throwers. The exercises are usually divided into preparation drills, used to

introduce, teach and improve throwing technique, and specific strength development exercises. The preparation drills, employed during the learning stage of the event, are mostly made up of imitation turns.

Exercises recommended to introduce beginners to the hammer throw technique involve rotational movements. These movements are usually missing in everyday activities, as most established stereotypes cover straight line motion — walking, running, jumping. This means that considerable changes must take place to co-ordination, made even more difficult by the counteracting centrifugal force of the hammer, which upsets the balance. For this reason, some of the more difficult drills can be performed in the beginning by using a support.

Experience has shown that the fastest and most efficient method to introduce young athletes to hammer throwing is the development of the correct leg work. After all, the hammer throw technique is based and depends on the precise action of the legs in all phases — the preliminary swings, the turns, accelerating the hammer and the final delivery. The following exercises are recommended:

1. Starting position — standing with the legs about shoulder width apart, slightly flexed in the knees. The left foot is placed on the heel, the right foot on the ball. Perform continuing 90 degree rotations.
2. Starting position — as in exercise 1. Perform 270 degree rotations by continuing on the ball of the left foot and by lifting the right foot off the ground. Many athletes believe that the support phase is passive and are not developing the muscles involved in the turning action of the left leg. However, practical experience has shown that throwers with active turning elements will master the second and third turn much faster.
3. Starting position — Standing on the left leg with the right foot placed on the left. Rise on the left heel and perform 180 degree turns.
4. Starting position — standing on the heel of the left foot with the right foot placed slightly in front of the left. Perform 45 degree rotations so that the left foot touches the right heel (20 to 30 repetition series).
5. Starting position — standing on the heel of the left foot placed next to a 10 to 15kg weight disc. The right foot is off the ground. Shift the weight disc by rotating on the left heel. It is important to complete the turn before the right foot is grounded.
6. Starting position — as in exercise 3. Perform the first part of the rotation 90 degrees) on the ball of the foot, the second part on the heel. It is important to initiate the turn with the legs and not the shoulders. The shoulders should actually be left behind.

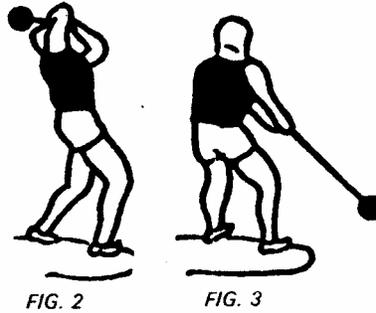
7. Starting position — standing feet together with a barbell on the shoulders. Rotate on the balls of the feet left, change to the heels and continue turning, then on the balls etc.
8. Starting position — as in exercise 7. Perform the rotations standing only on the left leg.
9. Standing position — as in exercise 1 with a gymnastics rod on the shoulders. Perform hammer throw turns in distinct double and single support phases. Emphasis should be on the proper leg action with the shoulder steady and the body upright.
10. Starting position — as in exercise 1 with a stick held in the straight arms. Perform uninterrupted rotations, attempting to draw an imaginary large circle with the end of the stick.

After the young throwers have mastered the elementary turning action, it is time to start learning to turn with the hammer or a medicine ball (placed in the net). This is done by numerous repetitions, started with one or two preliminary swings. It is recommended to perform 10 to 15 series of 10 to 15 single repetitions, employing exercises 4 and 6 during the recoveries between the series. The training session can be finished by throwing the medicine ball from a single turn into the net. Series of 10 to 15 repetitions of two turns, followed by three, four and five turns, are introduced as soon as the single turn with the hammer has become efficient. This, in turn, is followed by actual throwing from two or three rotations with emphasis on the rhythmical structure of the action. Practical experience has shown that by employing the suggested procedures makes it possible in five or six months to throw from three turns.

TECHNIQUE PRINCIPLES

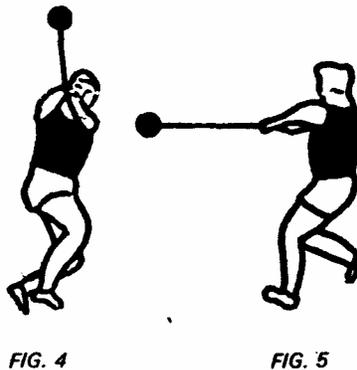
Preliminary swings are performed relaxed, accelerating the hammer on its downward path. This establishes the rhythm for the following turns. Two swings are usually executed. In the second swing the athlete turns his shoulders to the opposite direction of the hammer to lead the implement into the first turn (Fig.2). The transfer into the first turn takes place when the thrower's shoulder axis is parallel to his pelvic axis and the hammer is placed on the level of the toes of the right foot (Fig.3).

The turn begins on the toes with a slight forward lean of the body. The arms are relaxed and the shoulders are brought forward, as if to lengthen the arms. The hammer head is at this moment passing in the front of the athlete to move upwards approximately head high. The athlete turns on both feet for the first 90° and only then does he take the right foot off the ground to continue the movement on the toes, assisted by the inertia of the hammer. At this stage the hammer appears to "stretch" the back and arm muscles, helping to a more active first turn and a positive entry into the second.



On completion of the turn the right leg makes contact through the ball of the foot. This is an important aspect. Many athletes, including some leading throwers, land on the heel. This is common when the thrower feels that the hammer “runs away”. He is worried about being pulled out of the circle and counteracts it by sitting back onto his heel.

On bracing the right leg, it is important that the athlete grounds the leg just ahead of the hammer head passing its high point. Speaking figuratively the thrower overtakes the hammer with his right foot to move fast and relaxed into the second turn (Fig.4).



The entry into the second turn is similar to the start of the first turn, except the pivot begins on the heel of the left foot. During the turn the athlete leans a little more forward, with the plane of the hammer path a little higher, or similar, to the first turn (Fig.5). The transfer into the third turn must occur a little earlier with a faster and more powerful shift of the hammer head down to the left. The thrower drives downwards to the left (Fig.6).

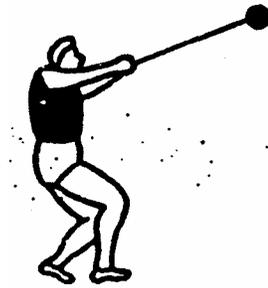


FIG. 6



FIG. 7

The fourth turn is performed with even more speed and effort (Fig.7). The athlete catches the hammer from the right to lead it up to the far left. This is accompanied by a very active pivot on the left toes and the placement of the right foot. At this point the right leg must be firm, so that the thrower does not turn away from the hammer. This would reduce the radius, as the right arm would bend just at the moment when the body and arms must form a stable triangle.

The final delivery action follows a powerful effort by the back, arm and leg muscles (Fig.8). The athlete, placing the right foot on its toes at the moment the hammer head is on the far right, directs it powerfully diagonally downward. It is important to stress here the need not to rush with the stretching of the legs. This action should take place after the hammer has passed the lowest point and is one of frequent faults of the delivery phase.

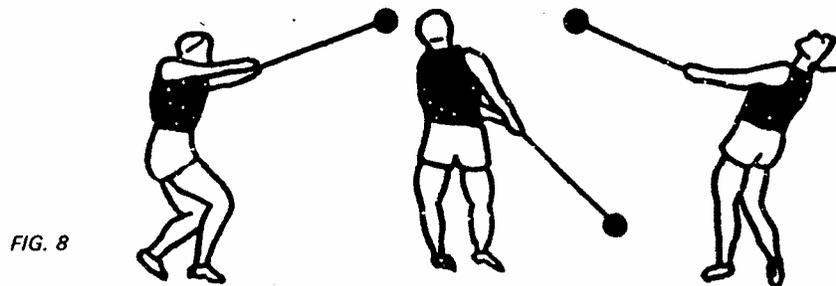


FIG. 8

The legs should begin to straighten after the hammer head has passed the low point. The athlete, continuing to force the hammer in a wide arc upwards, turns now on the toes slightly to the side. The arms complete the delivery with a lightning fast movement.

Finally, we would like to make a few remarks in relation to the rhythmic structure of the throw. Novices should right from the beginning establish a feeling for the hammer and develop a smooth and constant acceleration. Together with this, the leg work must be kept under constant control. The novices have to develop a feeling that makes it possible to exploit the hammers inertia in the single support phase. They must be taught that the feet move in the short arc but the hammer in a long arc. Therefore it is not necessary to hurry with the placement of the right leg. The feet always complete the turn earlier than the hammer to create a

favourable position for the final phase. The path of the hammer is over five times longer than that of the legs.

TRAINING PRINCIPLES

It has been generally accepted that hammer throwers use two different speed structures — one for training, the other for competitions. This means that the bulk of throws are performed using the slower structure, responsible for the development of a speed barrier. How can this be avoided and how to overcome the speed barrier?

Although lighter implements are used during the learning and technique development phases, it is important to request right from the start that athletes reach outstanding distances with all implements they use. This makes it possible to establish the throwing rhythm required to reach distances in the 75 to 80m region, as well as to overcome the speed barrier.

Whatever the weight of the hammer, it needs a release velocity of 27m/sec. to reach 75m. As young athletes fail to reach such release velocity with a 7.25kg hammer, they should use an implement corresponding to their physical ability. Further practical experience has shown that athletes who are unable to reach 75 to 80m with a hammer of any weight in two or three years, will never reach these distances with a 7.25kg hammer. The rate of improvement during the first few training years should therefore be rapid, allowing 15 to 16-year-olds to reach 75m with a light hammer.

The development of technique elements and the improvement of the rhythmical structure of the throw are the main tasks in all training phases. However, different secondary aims are responsible for some changes of emphasis, reflected in the distribution of general and specific work. This is applicable also to single exercises. For example, the number of throws with the competitive hammer is increased during the specific endurance development phase; while throwing of heavy hammers (9 to 13kg, 80cm wire length) dominate the specific strength development phase.