

## Hammer throw: Olga Kuzenkova

by Jacques Piasenta

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### Olga Kuzenkova (RUS)

World record holder with 73.10m (1997).

The sequence shows her first attempt at the European Cup in Munich, 22 June 1997. In the second attempt Olga Kuzenkova achieved a distance of 73.10m, setting a new world record, but unfortunately there exists no photo-sequence of that throw. (N.B. At the Munich meeting only 4 trials were allowed, on the decision of the EAA.)

Born: 4 October 1970  
Height: 1.76m  
Weight: 75kg

### Progression:

1990	59.50m	
1991	61.52m	
1992	65.40m	
1993	64.64m	
1994	66.84m	(women's world record, ratified by the IAAF)
1995	68.16m	
1996	69.46m	
1997	71.22m then 73.10m	

## Commentary on photosequence 38

by Guy Guérin

*Guy Guérin is the French national coach for hammer throw.*

This 71.22m throw by Olga Kuzenkova is broken down into its various phases, for a better understanding of its main elements:

- 1) swings (*photos 1-10*)
- 2) turns:
  - a) *Photos 11, 15, 16, 20 and 24* correspond to the low point of the trajectory in each turn.
  - b) *Photos 12, 17, 21 and 25* emphasise the movement amplitude at the end of the double support phase.
  - c) The single support phases are illustrated in *photos 13, 18, 22 and 26*.
  - d) *Photos 14, 19, 23 and 27* illustrate the regaining of right foot contact with the ground.
- 3) the release phase (*photos 28-31*).

### 1 Swing or preparation phase rhythm

*Photo 2* reflects the optimum position for a second, active swing (from *3* to *7*), accompanied by good relaxation, leading to *photo 9*.

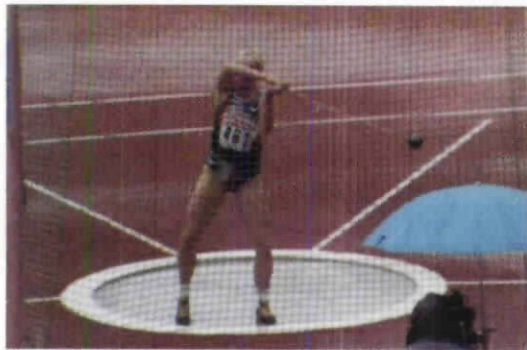
In *photo 2*, the shoulders are turned to the right, the elbows raised, and the hammer to the left of the athlete. The athlete's head has the same orientation from *photo 2-6*, and the feet remain flat on the ground. The axis of the body, centred over the left foot, allows a slight bending of the legs and the hips (*photos 2-7*).

*Photo 9* is the mirror image of position *2*, with a greater amplitude and followed by a period of flexion (in *photo 10*), which is conserved up to *photo 12*.

*Photos 2-6* and *9-10* are decisive for the rhythm of the swings and entry into the turns (*photo 12*).

The muscular action felt must be concentrated on relaxation of the upper body and the active role of the trunk rotator muscles. The timing of the flexion of the legs facilitates the twisting of the trunk, the amplitude of the movement and, therefore, a whipped return of the hammer to the low point (*photo 11*) and to the left (*12*).

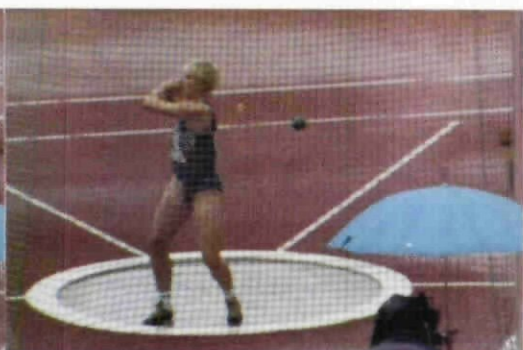
The effect of this whipping action leads to the positions shown in *photos 11 and 12*, where the upper body seems very free and the isosceles triangle (shoulder-arm) is close to perfect.



1



2



3



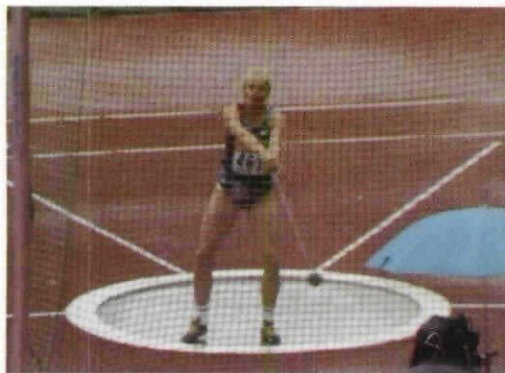
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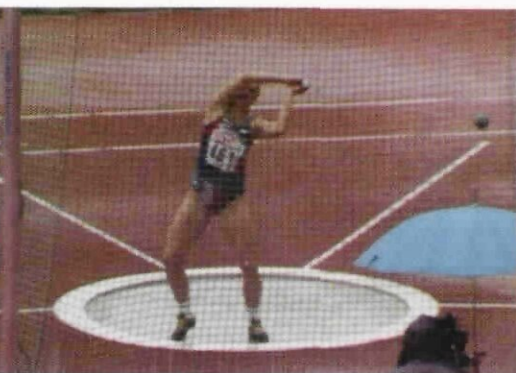
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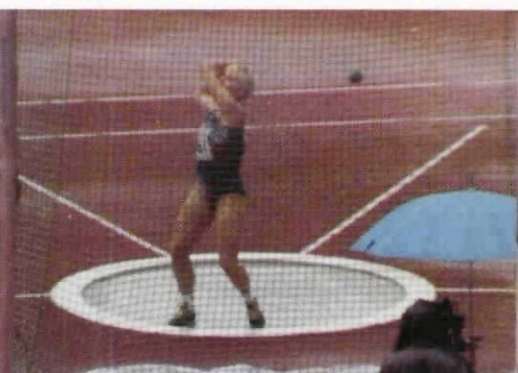
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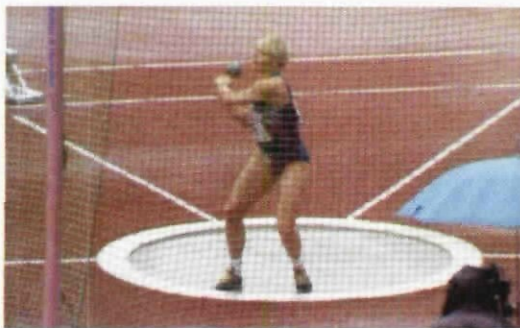
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8



9



10



11



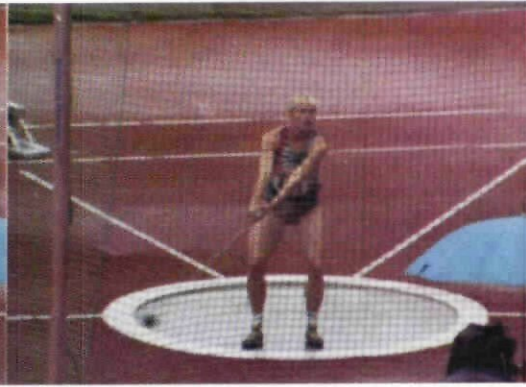
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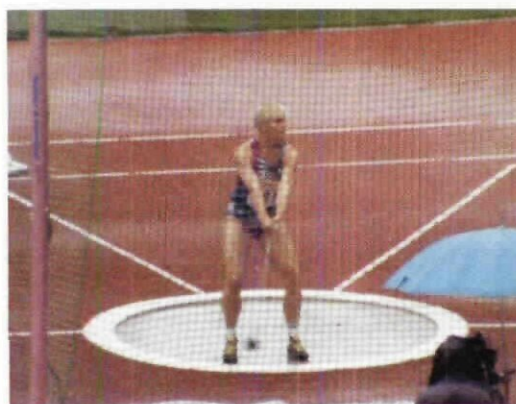
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18



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21



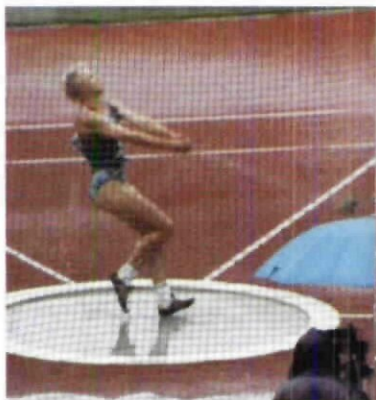
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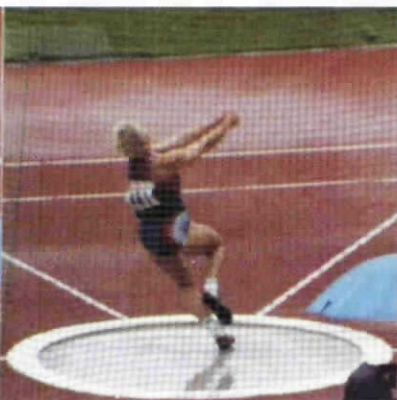
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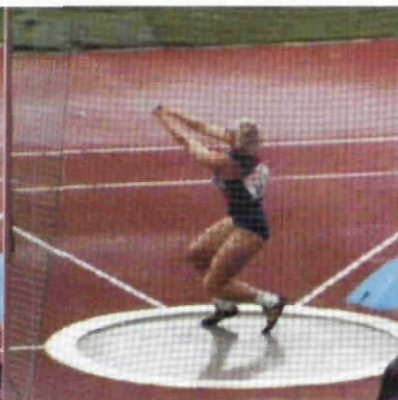
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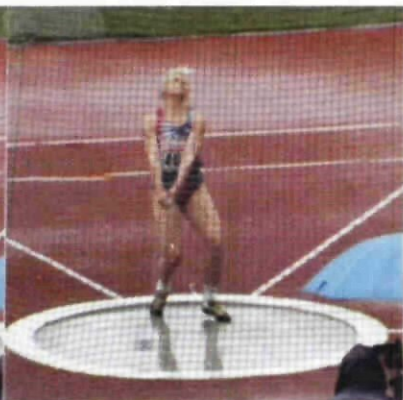
25



26



27



28



29



30



31

## 2 Comparison of turns

a) *Photos 11, 15 and 16*, and then *20, 24 and 28* of each turn, show the position of the isosceles triangle as the hammer passes its low point in front of the athlete before the rotation of the feet.

*Photos 15 and 16* illustrate the return of the axis of the shoulders to a position over that of the hips before the start of the turn. In *photo 20*, Olga Kuzenkova fixes her left foot to the ground, but in *photo 24* she anticipates the turn. This phenomenon throws her off balance for the rest of the throw, particularly in the release (from 28-31), where the left heel is not touching the ground.

b) The observation of the coach and the concentration of the athlete during

the throw are oriented towards the positions illustrated in *photos 12, 17, 21 and 25* (lever arm between the centre of mass of the thrower and the hammer).

This is the end of the double support phase, carried out on the flat of the foot in Kuzenkova's first turn. This option is variable, according to whether the throw includes three or four turns, and also according to the size of the feet.

The aim is to move the hammer to the same point in each turn. This point is at the height of and in the prolongation of the shoulders. Observation informs us of this by the horizontal placement of the arms and the hammer at that moment (after 90° rotation).

In this throw Kuzenkova reaches this point from photos 12 to 17. If photos 21 to 25 show a hammer trajectory which is too low, this is the result of insufficient acceleration due to the anticipation shown in photo 24.

c) "More haste, less speed" is the adage which sums up this phase. Here, haste is the athlete's enemy. Relaxation, and thus amplitude of movement, is preserved, thanks to the maintenance of the isosceles triangle (shoulder-arms) and the free upper body.

This support phase, carried out on the flat or on the toe of the left foot, allows the athlete to carry out the correct movement of the free leg (in this case, the right leg). One can observe a lifting of the right knee and foot in the leg cycle of every athletic speciality. Bringing the lower segments closer together favours speed of rotation and the overtaking of the hammer by the right leg (*photos 13, 18, 22*).

*Photo 26* reveals a fault; due to the previously mentioned incorrect anticipation, there is an opening out of the right knee.

During this phase the force exerted on the hammer is maintained.

d) If only Newton could see this!... or Foucauld's pendulum in a sporting sense!

The amount of acceleration in the throw depends on this double support action. Often called touch-down of the right foot by German and English coaches, the aim of this movement is to move the hammer to its high point (if possible) by means of the force exerted by the right leg.

The phases shown in *photos 14, 19, 23 and 27*, performed excellently by Olga Kuzenkova, allow a progressive acceleration during each turn.

Note her low position, which favours a release (unwinding) of the torsion between trunk and hips, which continues up to the low point of the hammer.

The flexed hips and knees facilitate the maintenance of the lever arm between the centres of gravity of the system thrower-missile.

*Photo 27* is a very fine illustration of women's throwing.

## 3 The release

The premature lift of the hips (*photos 27 and 28*), works against the flat-footed plant of the left foot. One might think that this fault arises from the previous anticipation, but the final effort in a throw tends to lead to this sort of plant of the left support.

In *photos 29, 30 and 31*, the right foot and knee maintain the same position and facilitate the final whipping action of the upper body. The lift of the hands above the head is the sign of a successful release.

*Translated from the original French by Eather Ross. Sequence and commentary appeared in: athlétisme, no. 404, Paris, September 1997.*

