

Pole vault: Yelena Isinbayeva

by © SystemSport

Yelena Isinbayeva (RUS)

The sequence shows the winning vault of 4.86m (WR) at the 11th IAAF World Indoor Championships in Athletics, Budapest 2004. The height of the grip on the pole was 4.44m and (the bar was 42cm above the grip). The pole, manufactured by "Spirit" Co., had an index of 15.0 and was 4.45m long. Its rigidity was calculated for an athlete weighing 77kg (the difference between the rigidity of the pole and the weight of the athlete (77 kg – 64.5kg) is 12 units) proving a good transfer of energy from run away to the pole.

Progression:

Year	Age	Performance
1997	14/15	3.30m
1998	15/16	4.00m
1999	16/17	4.20m
2000	17/18	4.45m
2001	18/19	4.47m
2002	19/20	4.60m
2003	20/21	4.65m
2004	21/22	4.86m
2004	21/22	4.91m

Born: 3 June 1982
 Height: 1.74m
 Weight: 64.5kg
 Best mark: 4.91m (WR)

IAAF World Youth Champion 1999
 IAAF World Indoor Champion 2003
 Olympic Champion 2004

Commentary on Photosequence 41

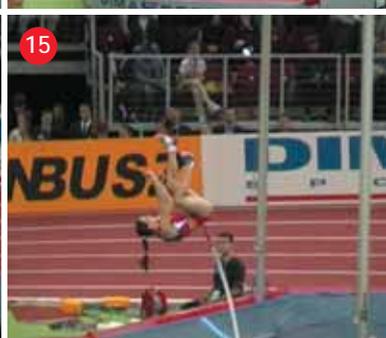
by Yevgeni Trofimov

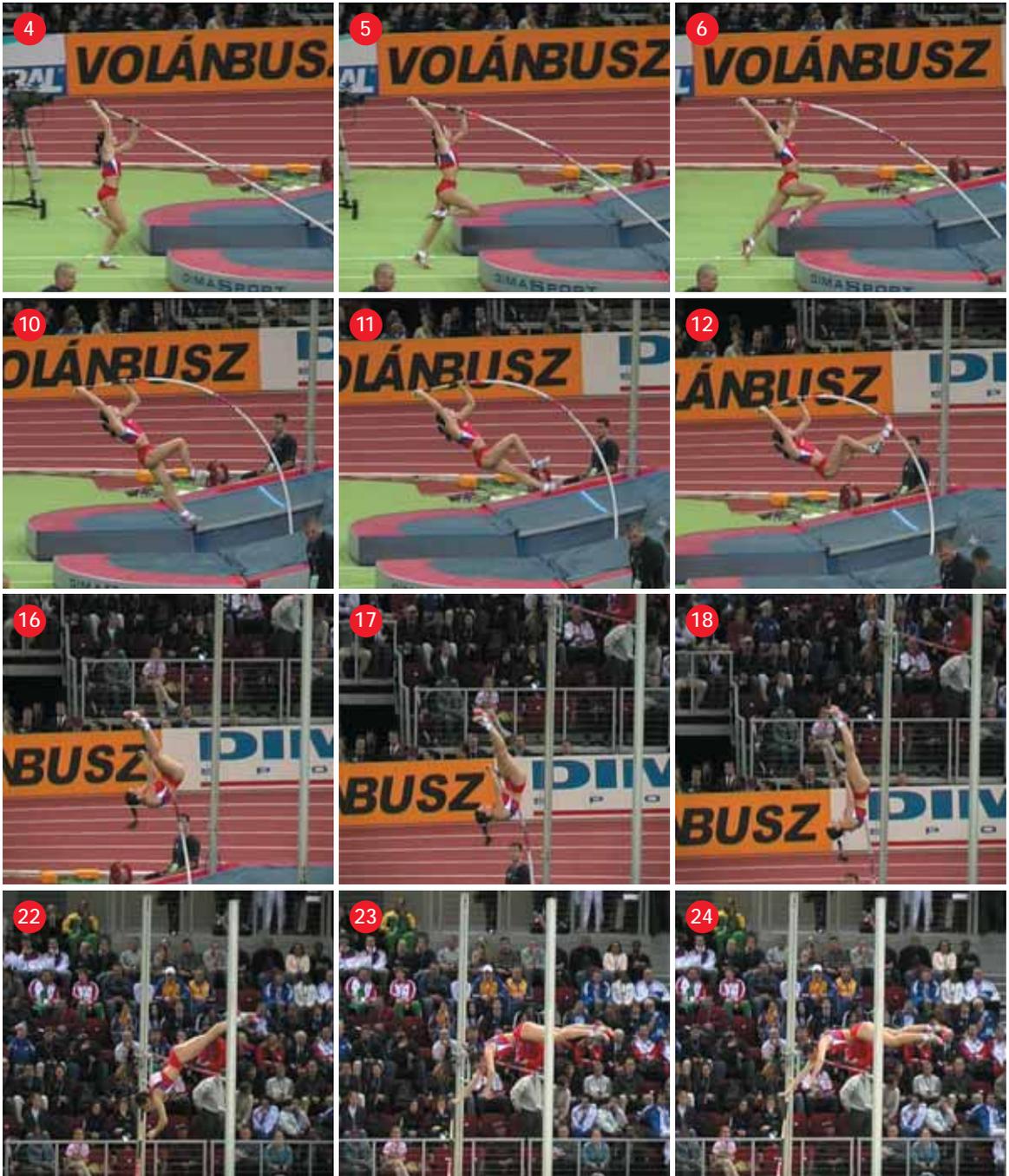
Prior to the analysis of the jump it has to be noted that during the competition in Budapest Isinbayeva exhausted the limit of rigidity of all the available poles. Therefore, the uprights had to be moved by 80cm (up to their limit) and, in order to create artificial resistance of the pole when entering the box, we had to correct the length of the approach run by the length of one foot at the point of takeoff (picture 3). This allowed her to feel the weight on the pole, but led to the extreme bending of the takeoff foot in the amortisation phase (pictures 3,4).

During the contact with the box (picture 4) the upper arm is not totally on the top, ie the elbow is slightly bent, but in this case, it is not a mistake. It allows Isinbayeva to reduce the shock to the right shoulder, to minimise the loss of speed when planting the pole in the box during the takeoff, to actively move her chest forward under the lower (left) arm, and to create the position of the extended arrow, maximally extending the body when entering the box (pictures 5,6).

NSA PHOTOSEQUENCE NO. 41

Yelena Isinbayeva





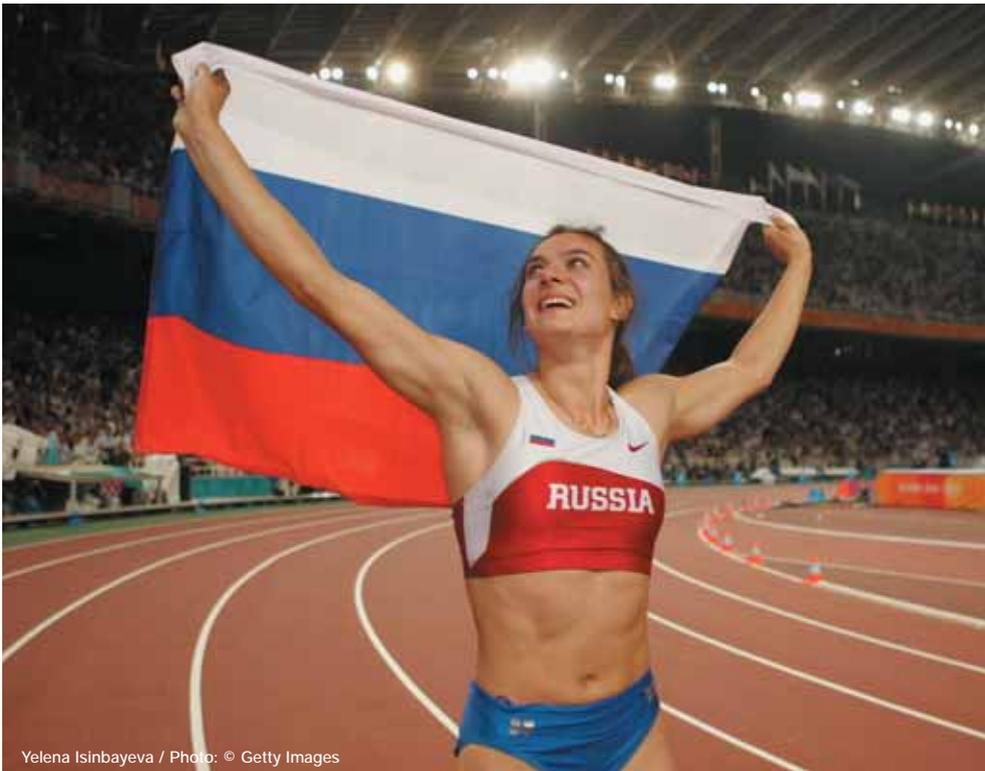
Due to the forced running under the pole, Isinbayeva is compelled to move her pelvis over the vertical in order to increase the depth of the entrance and to strengthen the ballistic tension of the front body muscles (picture 7). Thus, having created favourable conditions for the swinging movements on the movable foundation, she completes the swing/overturn powerfully and without interruption. This allows her to create the correct rhythmic structure for the vault, as if she moved her pelvis under the pole (pictures 7 – 13).

The bending of the pole at the top and the fact that the left arm is higher than the right when the body's centre of mass moves through the chord of the pole (pictures 10-12) proves that there is an active participation of the left arm during the overturn over the shoulders. If in pictures 1-7 we see the efforts of Isinbayeva to move the pole to the plane of uprights, in pictures 8 – 14 we can see the active loading of the pole.

The pelvis moves without any interruption in all phases of the swing and overturn, which allows Isinbayeva to maintain movement of shoulders according to the position of the pole and to cover the pole with her pelvis and legs, using minimum grouping (pictures 15, 16). These movements allow her to maintain the pole in the bent position and to realise the force of the straightening pole over the shoulders to the body (pictures 16 – 19).

Very important details in this jump are the maintenance of the right arm in its completely straight position until the end of the pole's unbending (pictures 17 – 19) and eye control of the feet (pictures 17-20).

The pole, which is too soft, does not provide significant lifting force and vertical speed, which causes Isinbayeva to complete an early overturn and an early separation from the pole (pictures 20,21). In the final stage of the jump, she demonstrates a good feeling for the bar (pictures 23,24).



Yelena Isinbayeva / Photo: © Getty Images