NSA 4: 81-88, 1989
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NSA Photosequence 9
High Jump

Silvia Costa (CUB)

Sequence by Helmar Hommel (© Hommel AVS 1989)

Born 4 May 1964; Height - 1.79m; Weight - 60 kg Best Mark - 2.04m (1989)

This sequence shows Costa clearing a personal best 2.03m to win at the ASV Köln Meeting on 20 August 1989. Later, at the World Cup in Athletics in Barcelona, Costa cleared 2.04m.

commentary
Sara Simeoni,
Erminio Azzaro

Various schools around the world have given different interpretations of the Fosbury Flop, thus bringing about slight but significant variations to the original technique. There are still athletes, however, who can achieve great performances with an exact and natural reproduction of the original Fosbury Flop. This spendid photosequence of Silvia Costa's jump is a good example.

Frames 1 to 10 show the fourth to last stride, a very delicate phase of the run-up, which marks the transition from a straight course to a curve. The running action is very clear in frames 2,3 and 4. The left leg is in the drive phase while the right knee advances, sustaining hips and trunk, effectively aided by a correct arm action. Each movement highlights a mechanically correct running action.

During the third to last stride, Frames 11 to 20, the increase in muscular tension is evident. This is due to the fact that there is no deceleration of the

hips, despite the curve. A strong plant of the foot favours the passage from right to left foot. Note that the right leg's strong drive (Frames 14,15,16) corresponds to a significant lift of the left knee. This, together with the forward movement of the right arm, maintains the correct position of the trunk.

Frames 21 to 29 show the transition to the penultimate stride. The athlete's inclination towards the inside of the curve enables her to balance the centrifugal force. This posture is favoured by the horizontal velocity of the hips, but mainly by a prompt and effective holding action of the right leg and foot. Another detail worthy of note is the athlete's control of the right foot (Frames 24 and 25), in preparation for a "clawing" action that will avoid deceleration.

Frames 30 to 33 show the transition from penultimate to last stride. The swift and active passage from right to left foot prevents the shoulders from overtaking the hips. The right ankle remains at an angle of 90°/100°, allowing the right knee to move forward but stay low.

Another outstanding feature is the action of the left foot which moves very close to the ground and is set down nearly parallel to the line of the uprights. The preparation for take-off (Frame 33) is very good. All the body segments are compact and the rotation of the trunk, in particular of the right shoulder and arm, prevents the body from moving towards the bar.

Frames 34 to 37 show the take-off (negative and positive phase). In frame 34 the athlete manages to maintain the inclination of the trunk during the beginning of the left foot's negative phase (holding phase). The take-off is very swift thanks to a quick and strong action of the right thigh (free leg). Also the movement of the arms is well coordinated and simultaneous, helping to raise the centre of gravity and so accelerate the take-off. The extension of the take-off leg (positive phase) begins on frame 36 and is completed on frame 38, when the athlete, having rapidly reached the vertical, is about to leave the ground. Note that the free leg transmits a vertical acceleration to the entire body (Frames 36, 37, 38) and that the angle at the knee of the flexed leg remains unchanged while the body moves upwards.

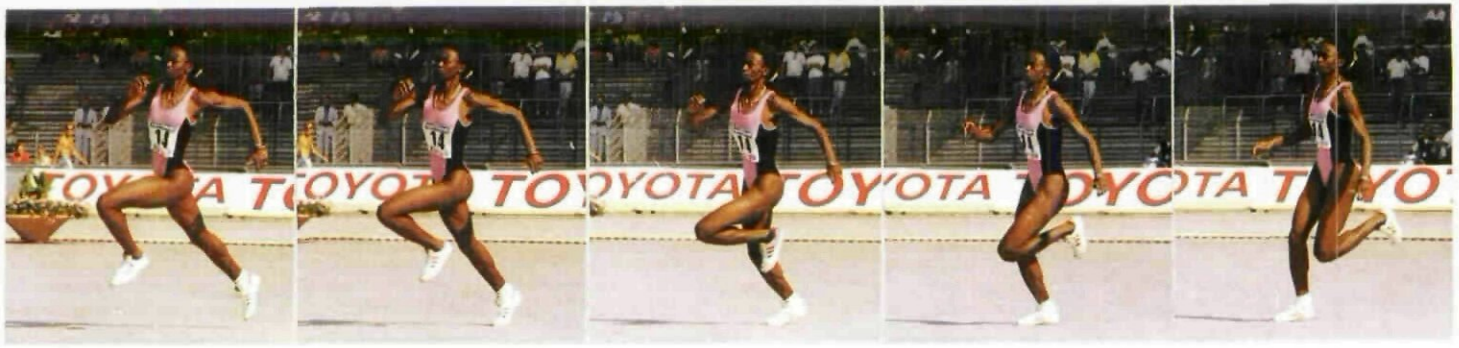
The flight and clearance phases are shown in the following frames. The athlete begins a rotation around the longitudinal axis (back to the bar) and around the transverse axis (clearance in a horizontal position) while she continues to move upwards, bending her head to favour the extension of the back (Frames 40 to 45).

During clearance, the athlete tends to move away from the bar instead of arching her body around it, as athletes have done in the past. This should not be considered a mistake but a consequence of the fact that this athlete has achieved greater dynamism during the run-up and take-off and therefore needs a wider flight curve.

The photo sequence of Silvia Costa's jump further confirms that the Flop technique of the future will prescribe a take-off further away from the bar, a lower flight angle (maybe even 45°-50°) and a wider flight curve. □

5 4 3 2 1

10 9 8 7 6



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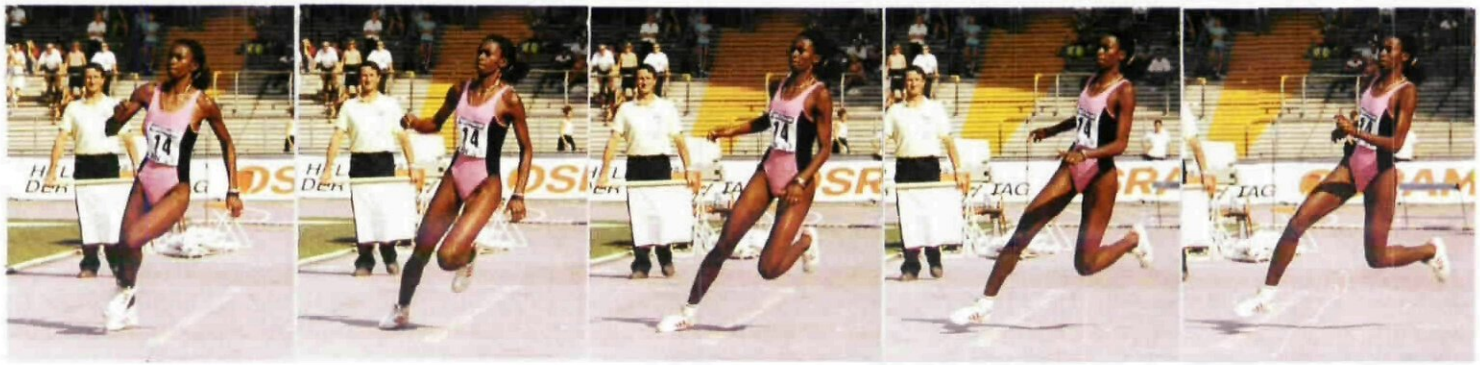
20 19 18 17 16

25 24 23 22 21



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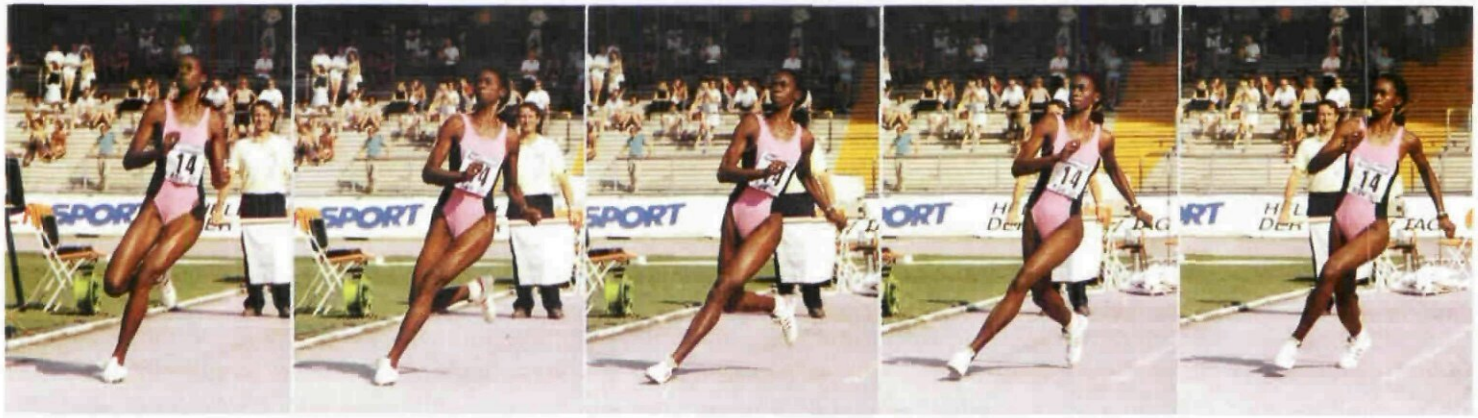

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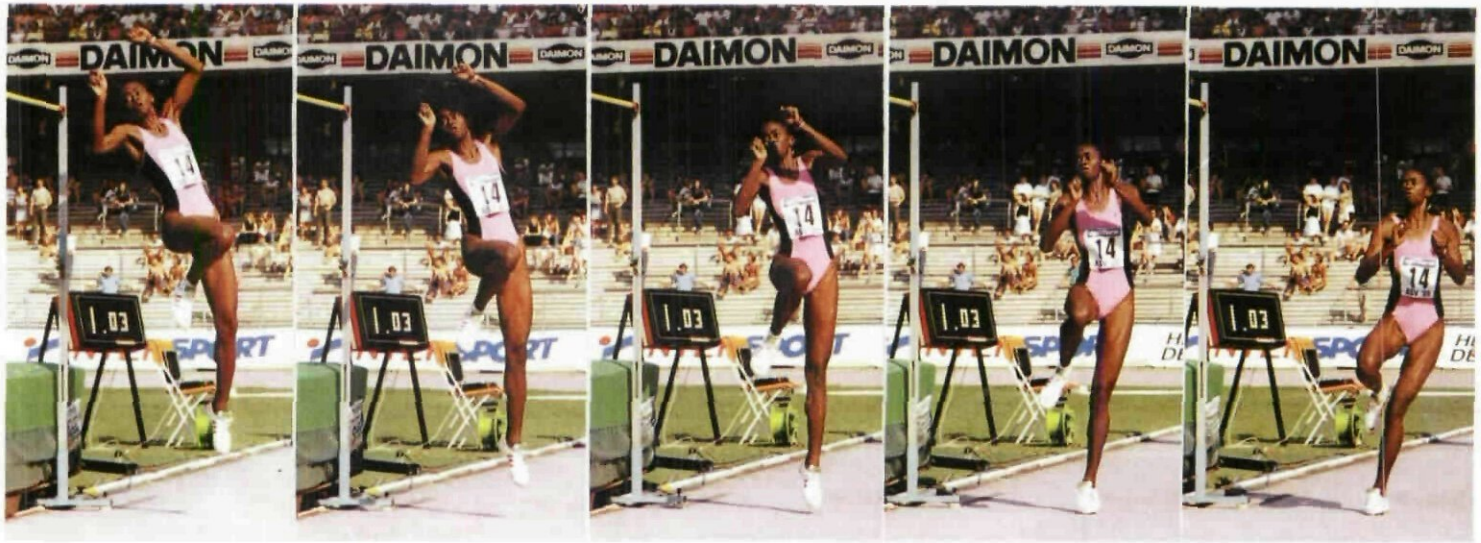

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45 44 43 42 41

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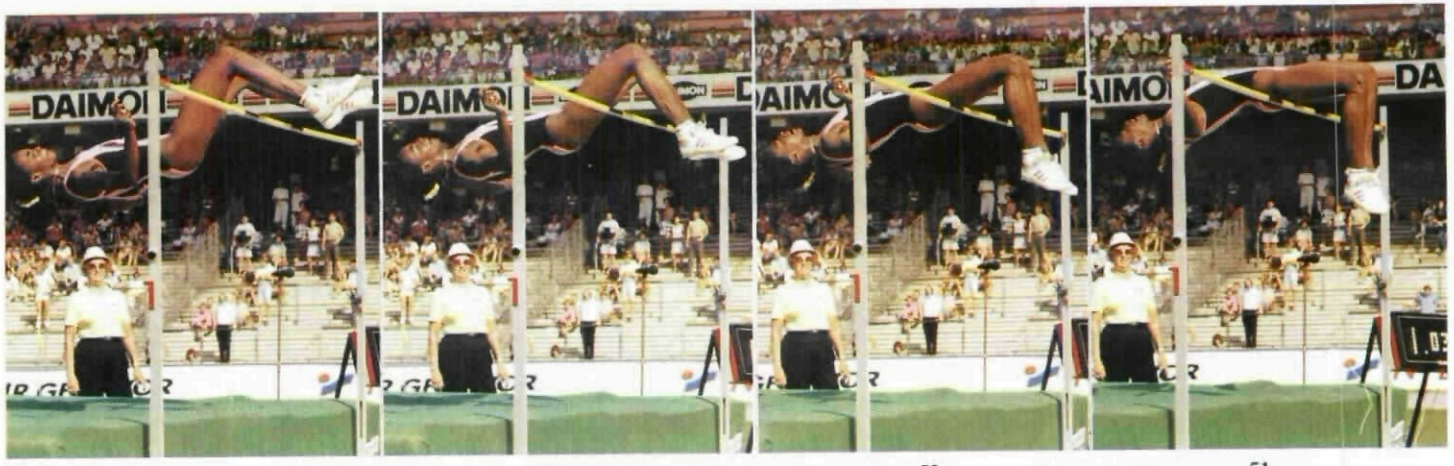

54 53 52 51

59 58 57 56 55