Triple jump: Yoelvis Quesada

by Helmar Hommel

Yoelvis Quesada (CUB)

The sequence shows his 2nd attempt in the final at the VIth IAAF World Championships in Athletics, Athens 1997, with which he settled a new Cuban record and won the gold medal. His series was: 17.60m/wind: -0.3m/sec; 17.85/0.9; 17.60/-0.4; x; -; -).


Born: 4 August 1973
Height: 1.81m
Weight: 71kg
Best marks: Triple jump 17.85m (1997)
Long jump 7.88m (1994).

Progression:

<table>
<thead>
<tr>
<th>Year</th>
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<th>Performance</th>
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<tbody>
<tr>
<td>1989</td>
<td>(16)</td>
<td>16.11m</td>
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<td>1990</td>
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<td>1991</td>
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<td>1996</td>
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<td>1997</td>
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Commentary on photosequence 39

by Jörg Elbe

Who would have thought that this would happen at the 1997 World Championships? The Cuban triple jumper, Yoelvis Quesada, beat the British world record holder and top favourite Jonathan Edwards to become world champion with a winning jump of 17.85 metres, which he achieved in his second trial. The characteristic elements of Quesada’s jump are revealed in this photosequence. Pictures 1 to 20 show the last strides of the run-up, pictures 20 to 36 show the hop, pictures 36 to 44 the step and pictures 44 to 54 the jump.

The run-up

Quesada reached a final run-up velocity of 10.3m/sec. This was 0.4m/sec slower than that achieved by Jonathan Edwards and even slower than that reached by all but one of the other finalists. (Biomechanical data are taken from BRÜGGMANN/ARAMPATZIS “Triple jump” in: MÜLLER/HOMMEL “Biomechanical Research Project at the VIth World Championships in Athletics, Athens 1997: Preliminary Report”, NSA 3/1997, p. 43ff).

The last few metres of Quesada’s run-up are very rhythmical. The penultimate stride (pictures 9 to 13) is 2.44m long, which is 16cm longer than the last stride (pictures 13 to 18). This type of take-off preparation is similar to that used in the long jump. Pictures 10 to 14, especially pictures 12 and 13, show a slight lowering of Quesada’s centre of gravity during the penultimate stride. This should lead to a subsequently higher trajectory of the hop. In fact, the vertical velocity of Quesada’s hop was 2.6m/sec. The last two run-up strides of Jonathan Edwards, on the other hand, were of equal length (2.34m and 2.33m). Thus, Jonathan Edwards created a more ideal prerequisite for an extremely velocity-oriented triple jump, with well-balanced phases. The vertical velocity of his hop was only 2.2m/sec, which means that it was much flatter. It can be clearly seen, in picture 20, that Quesada did not hit the board correctly and thereby lost 12cm.

The hop

Quesada’s take-off from the board into the hop is characterized by a good extension of the
hip, knee and ankle joint, with a simultaneous active use of the free leg [see also picture 23]. The loss of velocity from the run-up to the hop was calculated to be 0.6m/sec, which can be regarded as only slight. In pictures 24 to 30, Quesada is moving his left (take-off) leg forward again and at the same time is moving his right (free) leg, as a long pendulum, downward and backward. In picture 31, the knee of his take-off leg has reached its highest position, although it is not quite as high as his hip. His knee lift, therefore, is not very active but rather gives the impression of a relaxed preparation for the subsequent beating movement.

While, in picture 32, the thigh of Quesada's left leg is already moving downward, his lower leg is still moving forward. The complete extension of the leg has been achieved in picture 33 and, from now on, the extended leg is beating backward and downward, until the foot is grounded (picture 35). This means that Quesada, like Edwards, performs a pawing movement of the foot as a chain-like whipping action, thus creating an ideal preparation for the take-off for the step. And indeed, Quesada is badly in need of the advantage gained by this sort of movement, because, with a length of 6.68m and a vertical velocity of 2.6m/sec, his hop is the longest and highest of all the finalists. And it is not so easy to deal with the consequences of such a hop during the take-off for the step.

In picture 35 Quesada's foot touches down at a good distance from the perpendicular of his body's centre of gravity and his upper body is inclined to the left.

The step

Yoelvis Quesada is fighting against the effects of his gigantic hop. Picture 36 reveals a slight breaking away of his hip towards the rear and a pronounced 'giving in' of his knee joint. This is the reason for his great loss of velocity of 1.2m/sec. In spite of this, Quesada manages the take-off for the step phase quite well and he certainly benefits from the active whip-like movement of his left leg, the touchdown of the foot at the right distance in front of his body and an extremely well developed capacity to withstand amortisation.

In picture 37 Quesada is leaving the ground with an active extension of his hip, knee and ankle. However, his free leg is not high enough. At the apex of his flight his whole body is rotating forward (picture 39). Perhaps he could have counteracted this rotation by a more powerful movement of his swinging leg.

From picture 40 to 43 Quesada is whipping his right leg, in a chain-like manner, towards the ground again and into the take-off for the jump. Simultaneously, he is preparing a double arm swing. The length of his step was 5.21m. Edwards reached exactly the same distance, although his take-off into the step was not optimal. Quesada's vertical velocity during the step was 2.1m/sec, which can be considered as high.

The jump

In picture 44 Quesada is again showing a pronounced bend of his right knee. This time his hip remains stable, which is surely helped by the double arm swing.

In picture 45 Quesada is leaving the ground with a complete extension of his right leg while, at the same time, swinging his left knee high and with an open angle.

There follows an upright hang position, with the arms extended upwards (picture 47). Then the upper body and arms are moved forward and downward, while the extended legs are moved forward and upward (picture 50). As he lands in the pit, Quesada bends his knees and swings his arms backwards (picture 51). Then he crouches, swings his arms forward and lets his body slide past his feet (pictures 52 to 54).

The loss of velocity from the step to the jump is only 1.2m/sec. The vertical velocity achieved in the jump is 2.6m/sec. The length of the jump is 6.19m. The Russian triple jumper, Denis Kapustin, achieved a jump length of 6.40m with the same horizontal velocity and a higher vertical velocity during the jump (2.9m/sec).

Jonathan Edwards reached 6.35m in the jump, with a horizontal velocity which was 0.3m/sec higher and with a vertical velocity of 2.6m/sec.

Yoelvis Quesada's triple jump is clearly hop-dominated: The proportion of his hop is 37.0%. Actually his technique is held to be outdated but, although his run-up and average horizontal jumping velocity were not the best among the finalists, nevertheless he won the competition with clearly the best distance.

After the competition the world record holder, Jonathan Edwards, talked of not being in his best shape and of being unable to find his correct rhythm. This could clearly be seen from his jumping technique.

In my opinion, Quesada's outstanding attribute is a take-off technique, in each phase, which is optimally adapted to his personal characteristics. In particular, the beating movement of his take-off leg for the step and jump is excellent and his jumping strength is extraordinary. On this day Yoelvis Quesada was indeed the champion.