

TECHNIQUE ANALYSIS

AN ANALYSIS OF PIERRE QUINON'S VAULT TECHNIQUE

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1984 Olympic champion Quinon achieves remarkable consistency in performance by paying equal attention to all aspects of conditioning and technical training. This results in a mastery of vaulting fundamentals.

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1984 Olympic Champion Pierre Quinon is a product of the French school of vaulting. The French system has two central figures at its head, namely Maurice Houvion, current National Coach, and Jean Claude Perrin, former National Coach. These two world renowned experts have succeeded in producing World Record holders and latterly an Olympic Gold Medalist.

The paper that follows owes a great deal to the efforts of these two authorities in the art of pole vaulting: it must be said, however, that the views expressed relate to my own thoughts on the event and the philosophy I adopt in coaching it.

Pierre Quinon has been a World Class vaulter for a number of years, and is respected on the European circuit. It was in 1984 that he made his name known throughout the athletic world by winning a gold medal at the Los Angeles Olympic Games. This was a major breakthrough for French vaulting. The French have for a number of years succeeded in breaking world records, but when major titles have been at stake they seem unable to realize their potential. It would appear on the surface to be a psychological problem, a problem which Quinon seems to have overcome.

Physically he has the ideal build for a vaulter, being 1.80 meters (5-10%) and weighing 73kg. (161 lbs.). His build is characterized by a well-developed upper body, important when one realizes the forces exerted on it during the plant and takeoff phase (approx. 450 kgs). His lower limbs although well muscled are comparatively lightweight, an important factor in the final stages of the vault.

An analysis of Quinon's technique follows. In order to accomplish this, the vault will be broken down into its component parts which are:

1. The grip, carry and run.
2. The plant and takeoff.
3. The hang swing and rollback.
4. The extension and bar clearance.

It is important to remember that the vault is a sum of its parts, each preceding part affecting subsequent actions.

THE GRIP, CARRY AND RUN PHASE

Quinon uses a 4.90 meters (16-0A) effective handhold, hands placed about 22" apart, gripping the pole loosely. At the beginning of his run the angle of pole carry is approximately 60°, lowering progressively and becoming parallel with the runway at the commencement of the plant phase. There are no apparent check marks on the runway, which would seem to indicate a high level of consistency with regard to stride pattern. He accelerates smoothly from a standing start, reaching top speed four strides from takeoff. His run is characterized by an erect posture coupled with a high thigh pull-through, so essential for dynamic running and maintaining a high center of gravity. It is of even greater importance to the shorter vaulter, in order to maximize pole angle at takeoff.

THE PLANT AND TAKEOFF PHASE

It is this area of the vault in the opinion of most world authorities that is most crucial in terms of success or failure. The variables are legion, affected by the speed of run, the vaulter's height, strength, plant speed, timing of the plant and, above all, the position of the takeoff foot in relation to the top hand at takeoff. (THERE SHOULD BE NO COMPROMISE IN THIS AREA). The top hand should be directly over the ball of the vaulter's takeoff foot. Any deviation from this will inevitably lead to a modification of the takeoff action. It is here where Quinon displays his finest qualities. On entering the plant phase the pole is well out in front of his body. At the conclusion of the penultimate stride the right arm is thrust upwards quickly. Quinon's approach speed is so great that his top arm fails to reach full extension, resulting in a slightly lower pole angle. This is offset, in my opinion, by the tremendous forward and upward drive he achieves at the moment of takeoff.

Before we look at Quinon's approach to the takeoff phase, it would seem pertinent to remind ourselves of the salient features of this phase, which are:

1. The takeoff foot should be directly under the top hand.
2. The body should be in full extension prior to the pole striking the back of the box.
3. The front arm should provide a brace, to enable the vaulter to transfer the kinetic energy generated in the run with maximum effect.
4. The pole, looking from behind the vaulter, should bisect the body in order to achieve a balanced takeoff.
5. The upper torso must lead the vault, with the eyes looking upwards, while the trunk should retain sufficient tension to prevent flexion at the hips.
6. At the moment of takeoff the free knee is driven forward and upward, leaving the takeoff leg describing a long arc. It is vital that it does this, in order for the vaulter to achieve adequate penetration, important when one realizes how far he is from the landing bed.

How then does Quinon fit into this schema?

His plant, as indicated previously, is early and well out in front of him.

But, as indicated earlier, the top arm fails to reach the vertical, which results in the pole being slightly off center, creating a twisting moment around the vertical axis. This is manifested, in Quinon's case, by the pole first moving to the right immediately after take off and then transferring to the vaulter's left during the swing phase. My initial thoughts are that this is intentional, because I feel this is a strong position, and probably allows for increased linear velocity at takeoff.

At takeoff Quinon is slightly inboard of his takeoff

mark; however, such is the energy generated, coupled with a superb positioning of the upper torso, that this fault is of little consequence. An important factor emerges when one observes both Sergey and Quinon during the plant phase. When the pole has passed the front lip of the box, the eyes then focus upward, and continue to do so throughout the takeoff and rollback phases. This is a major fault with most British vaulters, who continue to look down well after takeoff and are therefore directing a high proportion of energy down through the pole, instead of conserving it in the pole.

HANG SWING AND ROLLBACK PHASE

After takeoff Quinon continues to drive the right knee forward and upward, leaving the takeoff leg in the fully extended position in order to maintain pole speed, thereby aiding penetration. The arms are fully extended with the front arm braced, creating room for the vaulter to swing efficiently. The swing is also facilitated by the pole moving quickly to the left, creating a high bar effect, while the pole is still fully bent. The high bar effect allows Quinon to elevate his hips above his shoulders before the pole starts its recoil. During the swing phase, the left leg stays elongated, catching up to the lead leg as the vaulter goes into the rollback phase, whereupon it bends and comes into line. Whereas Quinon tucks quite tightly during the rollback phase, Bubka stays fairly open, which allows him to achieve the extension position sooner.

It is at this point in the vault that there is a definite difference between the position adopted by Quinon and Bubka. While Bubka inverts fully and, in the words of his coach, covers the line of the pole, Quinon tucks his head into his chest with the result that he moves away from the line of the pole creating an eccentric thrust, forcing his body prematurely toward the bar.

An important fact to note with both vaulters is that the pole does reach the vertical, and in Quinon's case slightly past, making his push phase very efficient. In Bubka's case however, he is in an extended position very early on in the vault, and he drifts in to the bar as the pole unwinds, and has to rely on the effect of gravity to achieve bar clearance.

Quinon maintains his high running action until the penultimate stride of the plant phase, whereupon he lowers his center of gravity slightly in order to perform an effective jumping action at the moment of takeoff.

In conclusion, it has to be said that Quinon, and indeed the majority of the world class vaulters, achieve a high level of consistency in the mastery of the art of pole vaulting. The main reason for this consistency is that the aspects of conditioning and technical training are given equal credence throughout their careers. This can only result in fewer injuries and therefore achievement of a more consistent training pattern. This level of conditioning

enables them to perform a greater number of technical elements, with a resultant mastery of the fundamental components of the event.

It is vitally important that the technical elements are taught with the utmost care, especially during the formative years of an athlete's career, because faults ingrained at this time will be difficult if not impossible to correct later on.

A final thought: it is important to realize that all athletes are different; each has his own strengths. . . and his own weaknesses. Sound application of mechanical principles, coupled with a high level of conditioning, will

help to ensure that you, the coach, get the best out of your athlete and, more importantly he gets the best out of you.

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