NSA Photosequence 11
Middle Distance (1500 metres)

Paula Ivan
Sequence by Helmar Hommel (©Hommel AVS 1990)

Paula Ivan (ROM)
Born: 20 July 1963
Height: 1.70m
Weight: 57kg
Best Marks: 800m - 1:56.42 (1988); 1500m - 3:53.96 (1988); 3000m - 8:27.15 (1988);
5000m 15:31.22 (1989),
Olympic Champion at 1500 metres

This sequence shows Paula Ivan rounding the last bend during the 1500 metres final at the
1988 Olympic Games in Seoul. Her winning time of 3:53.96 was an Olympic Record.

Commentary
Jim Alford

Jim Alford is a member of the NSA Advisory Editorial Board and the Senior Consultant to the IAAF Development Department. During his long coaching career in both Britain and abroad he has worked with athletes in all events including middle distances. As a competitor he was the 1938 Empire Games Champion in the mile.

It is often said that the middle and long distance races are not "technical" events. There is much truth in this, since, unlike the recognised technical events, the throws, jumps, hurdles and, to some extent, the sprints, there are no new movements for the athlete to master. There is nothing more natural than walking (not race walking!) or running. Yet, natural and instinctive though the running action may be, the biomechanical details are quite complex. Moreover, no runner can cover the tremendous 'mileage' entailed in the long preparation essential for high achievement in these events without feeling that perfection of the running action can play an important role. After all, no athlete practises the action of his event more than the distance runner, who goes through the required movements thousands of times in every training run.

The concept of a good running action should be based on simple mechanical principles. It is nothing to do with looking pretty and everything to do with efficiency and economy of effort. The fastest runner does not always provide the best technical
model - success is often due much more to physiological advantages rather than to a superior running action.

A simple definition of an efficient distance running action is one that enables the athlete to achieve the required speed with the least possible expenditure of energy or one in which every single bodily movement is fully effective in driving the athlete forward on a smooth, straight path. What one should look for, therefore, is, first of all, good "reciprocal relaxation", only those muscles showing tension which are primarily concerned with propulsion. Next we should look for rhythm and smoothness, with the legs approaching as near as possible to the action of a wheel, the arms and, to some extent the shoulders, moving easily in balance with the legs, and the trunk and head remaining steady. The most revealing view of a runner is from the front. From this angle, it is very easy to check that a young athlete runs "straight", i.e. without undue toeing out or placing the feet wide of the "running line" and without any wasteful sideways movements. From the side view one can check the leg action and foot placement for under or over-striding and for good relaxation of the recovery leg, the arms and shoulders for relaxation and the posture of trunk and head for wasteful twisting movements.

In pictures 1 to 2, 9 to 10 and 18 the high kick up of the near foot is a sign of good relaxation of the recovery leg and the power of that leg during its previous drive phase coupled with the speedy pull-through of the recovery thigh. At this stage we are viewing a "finishing" action which is much stronger than one would expect during the bulk of the race.

Pictures 4, 5, 13 and 14 show the good knee lift one would expect to see during the finishing effort. Pictures 4 and 13 also show the full extension of ankle, knee and hips characteristic of a good middle distance action. Notable in pictures 1, 9 and 10 is the amount of flexion in the support leg and the good measure of relaxation shown in both lower body and hands. It is interesting to note how much more perceptible is this knee flexion in the "support" phase and the complete knee extension at the end of the drive phase in the case of fast middle distance running as compared to fast sprinting. This fits in well with the comparatively greater vertical component of drive in middle distance running.

Close examination with a magnifying glass reveals that there is excellent relaxation of hands and fingers throughout the sequence. Yet Ivan's upper body movements appear somewhat stiff and "rigid". The obvious faulty action, shown most clearly in picture 15, is a pronounced twisting of the shoulders. In my view, this is brought about because Ivan's arm action is not effective in counter-balancing her powerful leg action at this stage of the race. Any good sprinter can run much faster than Paula Ivan is doing here and still keep the shoulders relaxed and facing the front (admittedly the sprinter is helped by a much more massive arm musculature). Ivan's arm action appears to be faulty in two particulars:

1) In the backwards direction the arms are held too stiffly. Better relaxation would allow them to drop a little lower during this phase and thus provide a more forceful lever.

2) In the forward movements, the arms swing too much across the body, thus again weakening the reaction to the leg drive. Good as Ivan is, it looks as if she would benefit from some attention to her arm action during periods of "flat out" running.

However, the leg action looks powerful and efficient. Picture 16 shows the characteristic position of the foot of the leading leg at this stage. The runner's foot appears to be about to land heel first and well in advance of the hips but, in fact, when is does make contact, in picture 18, it lands on the sole and only a short distance ahead of the runner's centre of gravity, thus facilitating smooth, unchecked, forward propulsion.

The over-all impression from this sequence is of great power but of a running technique capable of some improvement - which might well lead to world record performances.