

SOME ASPECTS OF THE DISCUS THROW

By Merv, Kemp, Australia

Australia's national coach Merv Kemp, who is coaching at the Australian Institute of Sport in Canberra, reports on some aspects of the discus throw technique discussed at the European Athletics Coaches Congress in Aix les Bains, France, 1987. Re-printed with permission from Modern Athlete and Coach.

Czech discus coach Jan Vrabel speaking at the European Coaches Congress was critical of the technique of many modern discus throwers and felt that they lacked the technical finesse of throwers of decades past.

In particular Vrabel was critical of the delivery action of modern throwers when compared to that of Oerter and Danek (coached by Vrabel). Modern throwers are inhibited by the size of the circle and to avoid fouling they often have to check the forward / upward thrust and rotate away from the line of throw.

Possibly modern throwers:

- Pay too much attention to strength at the expense of technique.
- Because of their huge size, are lacking coordinative ability c.f. trend with hammer throwers and rotational shot putters.
- Undertake strength training which is too concentrated on general (squats, bench) rather than specific exercises with a technical basis.

But Vrabel also felt that the discus has inherent problems of a technical nature not experienced in the other throws:

- Final delivery action is more complex than the other throws, having rotational, vertical and linear components (c.f. shot-vertical and horizontal; hammer-rotational and vertical).
- Treachery of the discus technique. By this Vrabel meant the unreliable aspect of the discus technique and how improvements in some aspect can be offset by other flaws.

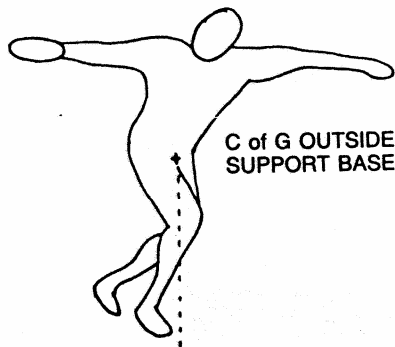


FIG. 1. BALANCE

Balance is important to good throwing. If the athlete is off balance he can't vigorously launch into the delivery. Poor balance at the point of release is exhibited by the athlete either:

- Falling away to the left.
- Falling out of the front of the circle.
- Falling back away from direction of the throw.

In the final delivery action a good deal of force must be applied to the right of the direction of the throw. The reaction to this will be to move the athlete left, off balance and possibly foul, unless this possibility is eliminated by the athlete being temporarily off balance in the power position. This, of course, does not sound correct, but remember that we are talking about a transitory position, one that the athlete passes through momentarily, coming back on balance at the point of the release.

POWER POSITION

How to achieve the correct power position?

It is the author's belief that the starting movements are very important and that the throw is set up at the back of the circle.

Preliminary Swings

The way in which these are carried out can be individualized and a variety of styles can be seen in throwers such as Delis, Opitz and Savinkova. But basic principles apply that everyone should follow.

The swings should take the widest arc possible with the object of establishing torque between the hip and shoulder axes. With partial swings very little torque is established. Once created, the task, and indeed the main problem, is to maintain the torque throughout the whole throw.

During the wind-up keep the hips between your feet and avoid getting too much weight on the right foot.

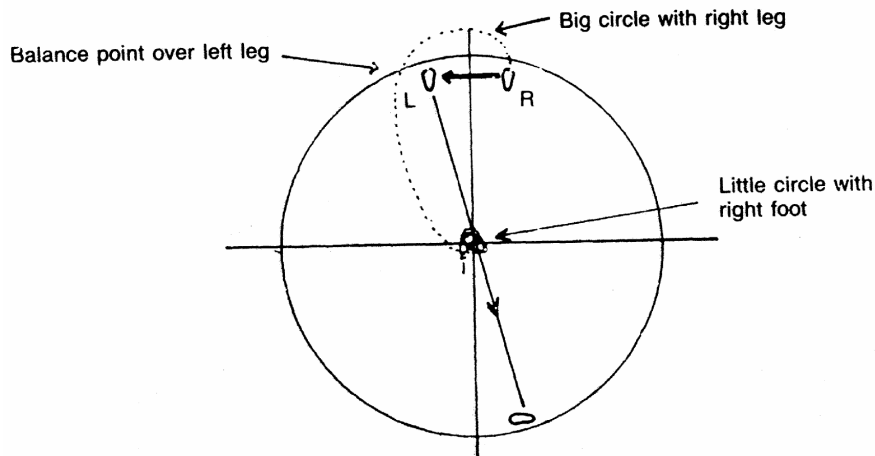


FIG. 2. ENTRY INTO THROW

Entry into the Throw

At the end of the wind-up hold the torqued position and move the body weight sideways from right to left. Think of moving the back of the left shoulder across and over the left foot to establish the balance point. At this point the right foot is just maintaining contact with the circle.

Great attention must be given to the movement of the left arm while moving to the left at the back of the circle. To avoid unwinding the torque and losing the displacement between the hip and shoulder axes, the left arm should lag behind the counter-clockwise turning left foot and left knee.

A common fault with many throwers is to commence the turning action into the centre too soon, before the athlete has moved his bodyweight firstly over and onto the left foot. This is often accompanied and caused by an overactive left arm racing ahead of the left foot action giving rise to an inefficient power position and a bowling action delivery.

The role of the left foot at the point of entry into the turn is particularly important. Mac Wilkins stresses that the pivoting action on the left foot should take place on the inner part of the ball of the left foot. A good rule to follow is "stay on the left foot as long as possible". The push off the left foot should come late.

At the back of the circle the main action comes from the wide swinging and a very active right leg. Despite the success enjoyed by John Powell with his linear action, better results can be obtained by stressing the circular action of the right leg sweep around the left. This is the 'big circle' path of the right leg, as described by Powell.

Wilkins advocates concentrating on sweeping the inside of the right thigh around the left leg and points out that many athletes lead the action with the top of the right thigh. When combined with an overactive left arm the result is an athlete rushing into the centre, landing off balance and unable to execute a powerful delivery.

The right leg should be actively swung towards the centre and the right foot placed as quickly as possible in the centre. The push off the left foot is delayed until the right foot is almost down again in the centre. It is as if the thrower is to again establish a double support position.

After pushing off with the left foot the object is to very quickly ground it again in its final position at the front of the circle. Wilkins believes the left leg should remain bent and tucked in close to the buttock and then actively grounded soon after the right foot lands.

Pushing off the left leg too soon is a major mistake that causes the athlete to jump too much across the circle, to be too long in a non-support phase during which torque is lost.

A good power position is characterized by the athlete's torso leaning back over the right leg with the throwing arm held high so that the discus is at shoulder height. To achieve this position it is necessary for the right foot to lead the action across the circle and at the same time to keep the torso fairly upright. As the right foot is about to land push the right hip out in the throwing direction.

Look for a shoulder-high position of the discus and a right angle between the throwing arm and the torso.

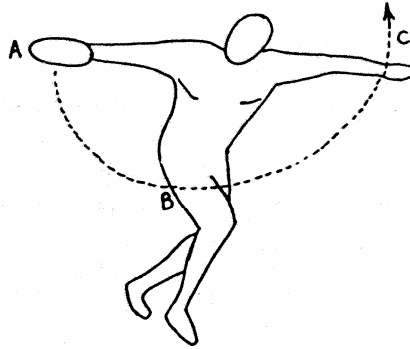
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PATH OF THE DISCUS

Maximum release velocity requires that force be applied along the:

1. Maximum acceleration path
2. Direction in which the discus is moving



**FIG. 8. THE PATH OF THE DISCUS
IN THE THROWING ACTION.**

For a good thrower at the point when the left foot touches the ground the discus is at A, 270 degrees. From A, the discus moves down and back to B before sweeping up to the release point at C. With beginners the left leg takes longer to ground and the discus is already in the position B, providing a clearly shorter acceleration path.

From B to C is an acceleration path common to both good and poor throwers. If an athlete improves his technique and shifts the discus from B to A in the power position then, despite the technical improvement, distances may not be better because of other technical problems. The thrower is used to accelerating the discus only from B to C and, as the discus moves down from A to B, the athlete may begin a linear movement forward with the left shoulder, shortening the radius and thus missing the opportunity of accelerating the discus from B to C.

Two choices are open to the athlete. Either he learns to wait until the discus approaches B before applying force with the legs and upper body or learn to make use of the descending path from A to B by applying force along the path taken by the discus, that is, down and against the direction of the throw. This is a short movement involving a lowering of the legs and upper body.

Try not to exert force in the direction of throw too soon. Stress the rotational work of the legs, hips and upper body.

Summarizing

When the discus is moving down and back don't attempt to move the body forwards and upwards. The consequences of this could be:

1. Fouling as the athlete pushes himself through the front of the circle.
2. Incomplete right leg drive as the athlete strives to avoid fouling.
3. Turning away to the left with the left shoulder and spinning back into the circle in order not to foul.

Instead stress the rotational nature of the throw and exert force along the path traveled by the discus.

DISCUS DRILLS

- Barbell on shoulders. Wind up as for throw. Pay attention to position of bodyweight and that the shoulders are level, barbell parallel to the ground.
- Balance point. Barbell on shoulders. Step to middle with the left arm / barbell in line and trailing hips. Turn on inside of the left foot.
- South African drill stepping only to the middle with the right leg. Keep the head back over the left foot as long as possible. Bring the left foot to front and aim to get the discus up at least shoulder high in a power position. This can be achieved by tilting the body to the rear.
- Step from balance point to the middle and, keeping the body weight over the right foot continuously pivot on the ball of the right foot, taking the left foot through to momentarily create a power position.
- Step from balance point to the centre again, keeping the body weight over the right foot; pivot on the ball of the right foot, bring the left foot through to the front of the circle and throw.
- Quarter turns pivoting on the ball of the left foot, maintaining torque in each position after the initial wind-up.
- Block drill. Step up onto 20cm high block with a bent left leg; stand up on the left leg and throw a 4kg ball.