

Overview of the Shot Put technique

George V. Gemer

“In this article, George Gemer outlines the evolution of Shot Put technique, stressing in particular the importance of the first phase: the glide. The aim is to assist coaches and athletes in understanding and employing the most effective technique.”

George Gemer was born in Hungary where he began his coaching career. He has lectured at the University of Lethbridge in Alberta, Canada and coached at the Southwind Atletika track club. He is presently a Canadian National Coach for the throwing events and has led a number of junior and senior teams.

Introduction

All too often in athletics we are strongly guided by those who produce the best results, instead of following the lead of those with the best technique. Unfortunately, due to the increasing use of drugs, combined with the development of better strength and fitness programmes, the most technically competent throwers do not always lead their event, causing many coaches and athletes to abandon logic and prior knowledge to employ the possibly inefficient methods of those that happen to be winning at a given point. It is time to re-examine the path we have followed in some of the technical events of athletics, particularly in the shot put.

The throwing technique should be a well coordinated, fluid motion allowing the athlete to exert the forces of his or her entire body over the greatest possible distance and the longest possible period of time in order to produce the optimum speed, angle and height of release, which will influence the trajectory of the implement. The overall effort, being smooth, rhythmical and ever-increasing in velocity, and utilizing each segment of the body with proper sequence and timing, should be divided into two significant parts.

The first part of the shot put technique is the preliminary movement or what is generally called the "glide". The second

part is the "putting action" itself. To explain these two segments of the technique using musical terms, we could possibly describe the first part, the glide, as *andante-pianissimo* i.e. moderate in tempo, quiet. The second part, the putting action, could be referred to as *staccato-fortissimo* i.e. with a sudden loud outburst, all individual instruments providing a high note and outlining the basic melody with great intensity.

Throughout the history of the event the glide has been subject to the most technical experimentation. In this article I will examine both this vital part of the technique and the evolution of technique in the event. My objective will be to provide some perspective which will assist coaches and athletes to understand and utilise the most effective technique in the shot put.

The glide

The glide serves two purposes. The first is to establish the putting position which will enable the athlete to make a maximum contribution to the velocity by accelerating each lever of the body in order, first the slowest, and strongest levers (the thighs and trunk) and then, when the implement has developed considerable speed, the fastest and weakest levers act (the arm, hand, and foot).

During this preliminary movement, the most important task for the thrower is to establish the most favourable position from which to begin the putting action. The second purpose of the glide is to develop initial momentum of the implement which will be increased during the putting action. It is important to remember that the momentum which is generated through the glide contributes only 10-15% to the final distance. The remaining 85-90% comes from the putting action. Thus, a well-executed standing throw, from what is normally a better position and without any of the initial momentum provided by the glide, cuts off only a fraction of the distance, perhaps 1.00-1.50m, that the athlete achieves with a glide. Therefore, the glide must

never be detrimental to the power position, or to the proper execution of the putting action. The glide should also never be so long as to take up too much of the circle as this forces the thrower into a position with a shortened throwing base. To compromise, then, we should decrease the distance and intensity of the glide, not the all-important throwing position.

The evolution of shot put technique

Now, let us examine the evolution of the throwing technique, the different gliding styles used, and how each has affected the power position and, ultimately, the distance of the throw. When talking about distances related to technical improvements, it must now be openly admitted that, during the last few decades, world-class performances and records have been achieved not necessarily because of the technical supremacy of the modern athlete, but rather because of improvements in their physical preparation and thus, their physical make-up, not to mention the increasing use of illegal performance-enhancing substances in some cases.

The modern shot-putting era can be divided into two periods:

1. The period before 1953 when the thrower began standing "sideways" to the direction of the throw.
2. The period when Parry O'Brien introduced a technique which called for the athlete to begin turned completely away from the direction of the throw, facing the back of the circle.

These two different starting positions influenced the form of the glide, as well as the power position achieved at the end of the glide.

In the "sideways" approach, the right handed athlete stood at the back of the circle with his/her hips and shoulders facing sideways to, and the left arm pointing towards the throwing direction. The feet were placed at a 90 degree angle to the

direction of the throw. After executing a circular or straight swing-like movement with the left leg, the athlete glided into a position where the entire body weight was shifted above the bent right knee, and the shoulders were turned back perpendicular to the direction of the throw. The left arm pointed opposite to the throwing direction creating torque and the left toe was planted on the ground with the inside edge of the foot slightly to the left of the throwing line. From this basic and simple position the right leg provided the powerful lift and rotation from the ball of the foot. This contribution from the leg was continued throughout the entire movement, shifting the torso over, above the active left leg and delivering the shot from a high position supported on the single leg. This method was easy to learn and was rather effective, as is evident from the following statistics:

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| i | 1928 - the first 16 metre throw, achieved by the German Hirschfeld. |
| ii | 1934 - Torrance (USA) : 17.40m. |
| iii | 1948 - Fonville (USA) : 17.68m. |
| iv | 1949 - Fuchs (USA) : 17.95m. |

The momentum which was gained in this "sideways" technique was much less than that which could be obtained using the O'Brien technique; however, the "sideways" approach made certain that the lifting work of the right leg was maintained throughout the throw. This feature of the technique outweighs its reduced momentum.

In the early 1950s, O'Brien started a new trend by standing in the circle with his back facing the direction of the throw. The aim of this technique was to extend the distance over which the thrower could exert forces to the implement, but the extra distance occurred in the preliminary movement which is not the main contributing part of the throw. Also, after completing the glide, the right toe pointed to the back of the circle,

causing the contribution of the leg for the lift and forward drive of the body to be cut down considerably. The throwing base was shortened, and, in the final phase of the putting action, the delivery was made without the necessary ground contact.

O'Brien improved the world record by throwing over 19 metres, but, in my view, this was largely due to his unique and systematic preparation and well-designed strength training programme, rather than because of his technical innovations. O'Brien extended the preliminary movement (which contributes very little) and sacrificed the power position, greatly reducing his throwing potential. Neider, Long, and Matson followed this new trend and further improved the world standard to the 21.78 metre mark, but also violated some of the basic mechanical rules which, if obeyed, would have produced even better results.

Six years later, Al Feurbach modified this technique by pulling the right leg under the body during the glide and placing the foot at a right angle to the direction of the throw. This corrected foot placement allowed for the maximum utilization of the right leg (characteristic of the "sideways" approach) helping him to achieve a distance of 21.82 metres, despite his relatively small body size in comparison with the throwing giants, O'Brien, Neider, and Matson. Another of Feurbach's countrymen, Schmock, also adopted this method of quickly pulling the right leg under and turning it 90 degrees, allowing him to produce very respectable results for his body weight and height.

It seems that after three decades of trial and error, and input from varying schools of thought and philosophy, we are back to the basics, recognizing that the drive of the right leg under the body with the foot at a right angle to the direction of the throw is necessary if the thrower wishes to use the leg to its maximum for a greater throwing effort. When coaching, comparing, evaluating, and analyzing a technique in any event, it must be made clear that we

should refer to and adopt those methods of athletes who are mechanically sound, instead of following those who may have the best results but have achieved them through sheer body size or even drugs.

Conclusion

To begin the throw from a position facing opposite to the throwing direction, and then execute the glide, turning the right leg to a 90 degree angle to the throw, is a very difficult task for throwers, especially younger throwers or combined event athletes. To teach this basic, but important part of the technique, it would be wiser to begin with the athlete facing sideways to the throwing direction, so that they can sense the contribution of the right leg as long as possible. After establishing the proper lifting sensation, the athlete can gradually move into a position with his/her back facing the throwing direction. In the cases of young athletes or combined event athletes, they can continue to compete from a sideways position, executing the hop-like glide from which the right leg lifting movement can be maximized.

The important thing is not how the thrower gets into position, but rather what kind of position he/she arrives in. Therefore, when introducing the throwing technique to young athletes, one should never begin with the starting position O'Brien used. The technique should be implemented segment by segment in a reverse order, from the delivery, to the basic throwing position, and finally, to the glide - first gliding from a sideways stance, and later, from a position facing away from the throwing direction.

In summation, it is essential and all-important to use our biomechanical knowledge to come up with the most feasible and effective techniques for our athletes. Not only are we striving for improved results, but since we, as coaches and athletes of today, are guides for the generations of achievers to come, it is imperative to employ proper techniques rather than rely solely on brute strength or drugs to be the best.

