

# DEVELOPING THE YOUNG SHOT PUTTER

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*This distinctly American approach gives insight to the development system that has produced many of the world's great shot putters. Re-printed with permission from New Studies in Athletics.*

The most important physical quality look for in the young thrower is explosive arm and leg power. Next, naturally, would be the size and mechanical advantage of height and weight to propel a 5.44 kg shot. All of our first year students (13 - 14 years old) are given a physical fitness test. Any male student who scores well in the 50 meters, the agility run, the 600 meters and most importantly, jumps over 2.44 meters in the standing long jump, is encouraged to be a thrower if he seems to have growth potential over 2.44m as a first year student - indicating he had explosive power. The average size of all my state champions has been 1.55m and 97kg.

There are other tests that are good predictors of success in throws. One is the vertical jump test, and I look for performances over 83cm. My best thrower was able to do a 96.5 cm vertical jump. Another test is maximal strength and I have found the following levels of performance to be good predictors of state champion potential:

1. Bench Press over 180 kg.
2. Half Squat over 225 kg.
3. Incline Bench over 172 kg.
4. Power Snatch over 100 kg.
5. Power Clean over 136 kg.

All these predictors are reliable as long as there is general equality in such things as size, weight, height and "flawless" technique.

In teaching the young thrower, I always start with the power position. Only after the novice has "mastered" the power position to a certain degree will I introduce the glide or turn. The coach must be very patient and realize that no two athletes are alike and each will have his own rate of learning a new skill. So, patience on the part of the coach and even the athlete is necessary for learning a technique.

When teaching the glide, the emphasis is on getting the athlete in a well balanced power position and the separation of the lower and upper parts of the body. These are two very difficult goals for the novice athletes to accomplish. I use the visual part-whole method when teaching. I video almost every day because I have found that flaws cannot elude the camera as they do the naked eye. I never allow my athletes to throw unless I watch them because my greatest fear is that they will develop and ingrain a bad habit. We throw every day in training, which is five days a week starting in November (after the football season) and six days a week starting in January, constantly drilling different aspects of the technique.

As far as the rotation technique is concerned, I have not introduced it as an option to the glide, although my last state champion was a spinner. He used what I call the "Linear Spin method, taught to me by Rob Roder. Randy Barnes uses a technique that is very close to this particular style. The progressions used are basically the same as those I use for the glide. Once an athlete learns the glide power position I introduce the spin release and progress backwards to the back of the circle, again, using the part-whole method.

I feel only certain athletes are capable of using the spin. Firstly, they must have good balance and then a certain mental temperament that enables them to overcome the frustrations and difficulties experienced in learning the technique. It seems that after a couple of years, the glide technique becomes "locked in" whereas the spin never seems to reach the point of consistency where the athlete feels comfortable with it.

In my own coaching I emphasize technique and skill development as much as conditioning. I have found that strength is necessary for an athlete to assume and perform some of the biomechanically sound positions for effective and efficient technique. If the athlete is too weak to handle these positions, then modifications have to be made in the technique, often resulting in problems later.

Even after the novice stage of an athlete's training, there is an "equal" emphasis placed on technique and conditioning. The only difference would be the more "advanced" aspects of the technique when the conditioning becomes more specific and intense.

Our training sessions are long, averaging 2-1/2 to 3 hours. This is because we attempt to balance strength training and technique work. The first part of each session is devoted to technique work with the second half used for strength training. Figure 1 shows a microcycle for the more experienced throwers (2 or more years of training) and for the novices for the week of January 8 to 12.

As can be seen, the emphasis with the younger athletes is on general strength and an introduction to Olympic weight lifting. The program for our more experienced shot putters has a great deal more Olympic lifting, because we are

looking for “explosive power” as well as maximum strength. The older athletes also do more *specific training*, i.e., tossing cleans, box tossing cleans, tossing overweight plates (puds) that weigh 16 to 23 kgs. The number of throws gets as high as 175 in one session.

**Figure 1**  
**Typical preparation week schedule for experienced and novice shot putters**  
 Note: All training sessions begin with 800m jogging and a series of warm-up drills.

MONDAY		Novice	
	Experienced		
AM	Flat Bench % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10		
PM	Standing throw x 5 (5.44 kg) Drills x 15 x (4.54 kg) Complete throw 3 x 5 (4.54 kg) (Total Throws - 35) Back squats - same as bench Push press 4 x 5 (85%) Trunk exercises 2 x 10	Standing throw x 25 (4.54 kg) Bench 4 x 10 (60%) Squats 4 x 10 (60%) Heel raises 3 x 10 (100%) Push press 4 x 10 (60%) Arm curls 4 x 10 (60%) Trunk Exercises 2 x 10	
TUESDAY			
AM	Snatch % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10		
PM	Standing throw x 5 (5.44 kg) Drills 4 x 5 (4.54 kg) Complete throw 3 x 5 (5.44 kg) (Total throws - 40) Jog 1600m Split jumps 2 x 10 1/2 jump-squats 2 x 10 Single leg hops 2 x 10 (alt. legs) 45 cm box rebound 2 x 10 Med. ball 4 x 10 Blocks 5 x 15m Trampoline	Standing throw 5 x 5 (4.54 kg) Complete throw 2 x 5 (4.54 kg) (Total throws - 35) Jog 1600m Split jumps 2 x 10 1/2 jump-squats 2 x 10 Single leg hops 2 x 5 (alt.) Med. ball 4 x 10 Blocks 5 x 15m Trampoline	
WEDNESDAY			
AM	Bench press % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10		
PM	Standing throw x 10 (5.44 kg) Drill 3 x 5 (4.54 kg) Complete 5 x 5 (4.54 kg) (Total throws - 50) Flat bench % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10 Squats % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10 Push press 4 x 5 (85%) Leg press 4 x 5 (85%) Trunk exercise 4 x 10	Standing throw 4 x 5 (5.44 kg) Complete throw 2 x 5 (4.54 kg) (Total throws - 30) Bench 4 x 10 (60%) Squats 4 x 10 (60%) Heel raises 3 x 10 (100%) Press behind neck 4 x 10 (60%) Arm curls 4 x 10 (60%) Trunk exercise 4 x 10	

First year students do not train above 85 percent. I have found that is very adequate for youths who have no background experience in weight training. The more experienced athletes will usually train above the 80 percent level, and they

do as many Olympic lifts as regular lifts. In some microcycles, though, the Olympic lifts dominate.

**Figure 1 continued**

<b>THURSDAY</b>			
	<b>Experienced</b>		<b>Novice</b>
<b>AM</b>	<b>Power Clean</b> % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10		
<b>PM</b>	<b>Stand throw</b> x 5 (5.44 kg) <b>Complete throw</b> 6 x 5 (5.44 kg)) (Total throws - 35) <b>Jog</b> 1600m <b>Stadium steps hop</b> (two leg) x 4 <b>75 cm box to 45 cm box</b> 2 x 10 <b>Progressive squat jumps</b> 2 x 10 <b>360 degree squat jumps</b> 2 x 10 <b>Medicine ball</b> 4 x 10 <b>Pendulum shot</b> 3 x 8 <b>Blocks</b> 7 x 15m <b>Trampoline</b>		<b>Stand throw</b> 2 x 5 (5.44 kg) <b>Jog</b> 1600m <b>Jump tucks</b> 2 x 10 <b>1/2 Jump squats</b> 2 x 10 <b>Hop backwards</b> (one leg) 2 x 10 <b>Medicine ball</b> 4x10 <b>Blocks</b> 7 x 15m <b>Trampoline</b>
<b>FRIDAY</b>			
<b>AM</b>	<b>Flat bench</b> % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10		
<b>PM</b>	<b>Stand throws</b> 2 x 5 (5.44 kg) <b>Drills</b> 4 x 5 (5.44 kg) <b>Complete throws</b> 4 x 5 (4.54 kg) (Total throws - 50) <b>Squats</b> % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10 <b>Push press</b> % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10 <b>Leg press</b> % 70 75 80 85 80 75 70 x 10 8 6 4 6 8 10 <b>Trunk exercises</b> 4 x 10		<b>Bench</b> 4 x 10 (60%) <b>Squats</b> 4 x 10 (60%) <b>Heel raises</b> 3 x 10 (100%) <b>Push press</b> 4 x 10 (60%) <b>Arm curls</b> 4 x 10 (60%) <b>Trunk exercises</b> 4 x 10

Alongside our weight training work, I feel that plyometrics are absolutely necessary for the development of explosive power through the development of the stretch-reflex.

The novice throwers begin with very basic jumps, such as:

- Standing long jump
- Standing triple jump
- Double leg jumps
- Vertical jumps, and

- Single leg hopping and skipping

As they develop strength, they are introduced to jumps over objects, such as medicine balls, 30 cm traffic cones and double leg box jumps off 30 cm boxes. If I do not see a 'quick' foot response, then they cannot continue the exercise. The jumps must be done very fast with a quick response if there is to be any benefit. The number of contacts or landings starts with 30 to 40 and builds up to 150 with the most experienced of our athletes.

The jumps obviously become more specific as the athlete gets older and stronger. For example, I use an exercise where the athlete drives off a 30 cm box into the power position and delivers the shot (competitive weight). I use the same program as prescribed by Dr. Sergio Zanon (1). I also use the pendulum-shot for plyometric training of the arm.

For our best senior athletes, plyometric jumps are integrated into the squatting program. There have been studies indicating this is a very effective training routine.

At the start of the season, I make the athletes use lighter implements so that they are able to concentrate on technique. Novice throwers find the competitive implement (5.44kg) very difficult to handle and do the technique poorly. I use more of a mixture of the light and standard weight shots for the more mature athletes. For the first two months, we throw only into a net, taking away the "distance factor". I don't want the throwers thinking about records when they should be concentrating on technique.

The number of throws is "low" at first, from 25 to 40 per day. We throw every day!

Different or variable weight implements are used for two reasons; the first is because of individual needs. If there is a need for specific strength, then the heavier implements are used. Secondly, we use different weight implements for the same reason that we constantly change our weight training, for the purpose of shocking the neuro-muscular system and helping to prevent plateauing. The body adapts to the same weight being used day after day. Anatoliy Bondarchuk has said that he found no "ideal" combination of weights in terms of daily, weekly, or monthly sessions. He used all kinds of combinations, but did find that different throwers respond differently to the various combinations. He then adjusted the combinations that suited a particular athlete.

At the 1977 Canadian Track Clinic, Peter Tschiene discussed a GDR study which stated that possible negative feedback may affect timing in the technique. The GDR researchers found that if the weight of the implement is too heavy or too light, it could alter the timing of the technique. This does not imply that a heavier or lighter implement cannot be used, it just means that the athlete throws from a stand or a modified position.

The volume of throws taken in a year by our novice throwers averages about 4000 to 5000 throws or about 500 to 700 throws a month, With more experienced throwers we average between 6000 to 7000 throws a year or 800 to 1000 throws a month. If we count the number of overweight throws (barbell discs, puds, etc.), it could climb to 175 throws in one session.

In the competitive season, we are required to compete at least once a week in a dual meet and then we usually have multi-team competitions on Saturdays. The state association says we can have a maximum of 18 competitions per year, including the conference, sectional and state championships. This also includes the 5 indoor meetings that are staged during the winter. Our outdoor season begins in the first week of April. I would prefer to have only Saturday meets, but for the average athlete who would not qualify for the state meet, these dual meets are important for maintaining interest. The “elite” athlete trains right through these meets by practicing before them. We convince the “elite” thrower that the state championship is the ultimate goal.

We prepare the athlete for competition by reducing the volume of work and using high intensity weight training twice a week to maintain the training level. The numbers of jumps and throws are reduced to enable the athlete to feel mentally and physically fresh. The throwing during the last three weeks is for “fine tuning” the technique. Figure 2 shows a typical micro-cycle during the competitive season.

As for monitoring my throwers training progress, I use the Max Jones Quadrathlon. It tests all aspects of speed and power, and consists of four tests:

1. The Standing Long Jump
2. Three Double Leg Jumps
3. 30m from Blocks, and;
4. Overhead Throw with the Competitive Implement

I have found that if the training has been effective, there is steady progress in all phases of the test. It seems that at about the time when we are “peaking” for the state championships, if the training has been on schedule, there is usually a dramatic improvement in the 30m and the overhead shot throw. When a male athlete scores over 250 points, I feel he is physically ready for the state championships.

Figure 2:

Typical competition week schedule for experienced and novice shot putters

Note: All practices begin with a 800m run and a series of warm-up drills

MONDAY

Experienced

AM Snatch % 50 60 70 80 90 95  
x 4 3 3 3 1 1

PM Trunk exercise 4 x 10  
Standing throw 3 x 5 (4.54 kg)  
Drill 2 x 5 (5.44 kg)  
Drill 2 x 5 (5.44 kg)  
Drill 3 x 5 (5.44 kg)  
(Total throws - 50)  
Incline 4 x 10 (50%)  
Static incline 6 x 80%  
Squat jumps 3 x 6 (80%)  
Squats 3 x 4 (90%) (+ 8 hurdle  
hops after each set)  
Trunk exercise 4 x 10

Novice

Standing throw x 10 (5.44 kg)  
Drill x 5 (5.44 kg)  
Complete throw 5 x 5 (5.44 kg)  
(Total throws - 50)  
Cleans 3 x 6 (70%)  
Incline % 85 90 95 90  
x 5 3 2 3  
Squats % 85 90 95 90  
x 5 3 2 3  
Flys 3 x 10  
Trunk exercise 4 x 10

TUESDAY

PM Warm-up  
Clean pulls 5 x 3 (85%)  
COMPETITION (approx. 10 throws)  
Complete throw 5 x 5 (6.55 kg)  
(Total throws - 35)  
Double leg hops 3 x 5 (measured)  
3 x 10m from blocks

COMPETITION (10 - 15 throws)

WEDNESDAY

AM Cleans % 60 70 80 90  
x 5 4 3 2  
Trunk exercise 4 x 10

PM Standing throw x 5 (6.55 kg)  
Drill 2 x 5 (5.44 kg)  
Drill 2 x 5 (5.44 kg)  
Complete throws 8 x 5 (2 x 4.54 kg  
+ 3 x 5.44 kg)  
(Total throws - 65)  
Hurdle hops 5 x 1000  
Incline 5 x 4 (50%) 3 x 4 (90%)  
Squats 5 x 4 (60%) 3 x 4 (90%)  
Flys 3 x 10  
Trunk exercises 4 x 10

Standing throw x 5 (5.44 kg)  
Complete throw 5 x 5 (5.44 kg)  
(Total throws - 30)  
Cleans 4 x 6 (70%)  
Incline % 85 90 95 90  
x 5 3 2 3  
Squats % 85 90 95 90  
x 5 3 2 3  
Flys 4 x 10  
Trunk exercises 4 x 10

Figure 2 continued

THURSDAY		
Experienced		Novice
AM	Snatch 4 x 3 (85%)	
PM	Standing throw x 5 (5.44 kg) Drill x 5 (5.44 kg) Complete throw 4 x 5 (5.44 kg) Standing discus x 5 Complete discus 3 x 5 (Total throws 50V 3 x 30m from blocks	Stand throw x 5 (5.44 kg) Complete throw 4 x 5 (5.44 kg) Standing discus x 5 Complete discus x 5 (Total throws - 50)
FRIDAY		
AM	Snatch pulls % 60 70 80 80 80 90 x 5 4 3 3 3 2	
	Trunk exercises 4 x 10	
PM	Standing throw x 5 (5.44 kg) Complete throw 5 x 5 (3 x 4.54 kg 2 x 5.44 kg) (Total throws - 30)	Standing throw x 5 (5.44 kg) Complete throw 4 x 5 (5.44 kg) Standing discus x 5 Complete discus 6 x 5 (Total throws - 60) Snatch 4 x 6 (70%) Incline % 85 90 95 90 x 5 3 2 3 Squats % 85 90 95 90 x 5 3 2 3 Flys 4 x 5 Trunk exercise 4 x 10
SATURDAY COMPETITION		

For the young thrower, gaining weight and getting "bulked up" are of great concern, especially after reading the muscle magazines that fire their fantasies. It becomes very difficult to convince them that as they mature and continue to work hard and follow the weight program I develop for them, they will one day be as big as the older athletes. I have to explain maturation to them and tell them they must be patient, because they have their own growth rates.

A problem I run into is their wanting to buy food supplements. When they read all the advertisements in the muscle magazines, they think these proteins will be a quick fix to get big bulging muscles. I emphasize that we are not body builders, but athletes. Our role model is Ulf Timmerman. It's not how massive you are, though muscle mass does help, but how explosively the shot leaves the hand. Ulf Timmerman may not own the Mr. Universe title, but he does hold the world record and is an Olympic champion.

A recent United States Olympic Committee study stated that there is no scientific proof that supplemental protein will enhance muscle growth. The studies revealed that hard intense lifting is the most effective way to develop muscle mass.



I am somewhat ambivalent on the subject of specialization. There are sports played in American high schools which are very compatible with the throws such as American football. However, I discourage a boy from getting involved in basketball. I feel that American football complements the throws since the athletes are encouraged to lift weights. It is an aggressive sport that teaches mental toughness and requires movements that help to develop speed and agility and the “killer instinct”, a necessary ingredient for a good shot putter.

Basketball coaches generally discourage the type of weight training that is required for the throws and are opposed to their players gaining any bulk. Also, on the high school level, basketball and wrestling overlap into the indoor track season, a time which I feel is very important to prepare the thrower for the outdoor season. Basketball and wrestling finish at the end of February and two months (March and April) is just not enough time to prepare a top athlete for the state championships which, in our state are at the end of May.

I am sure we could produce many more good throwers in the USA, but a major limitation is the fact that we have very few throws coaches. Those schools that do have throws coaches usually hire American football coaches who use the position to earn extra money and monitor the weight training of their football players. As a result, their hearts are really not in the shot put. I have seen some outstanding athletes who could have been potential state champions but, because of their poor technique, have never progressed beyond average level. The second reason, is that the coaches who do coach the shot do not possess a good knowledge of technique and are not knowledgeable in developing a periodized training program that enables their athletes to ‘peak’ for the state championship. It is amazing to see that, even at college level, “advanced shot putters have poor technique and poor training programs (if they have any at all).

Another reason for the lack of throwers is the interest of the really talented athletes in the “money sports”, such as football, basketball and baseball. In the USA, track is a “minor” sport and any athlete who is worth his salt will go where the money is. There are some states that will not allow any kind of track and field training until the first day of March; thus allowing the coach only two months to develop a shot putter. A boy from one of these states may never reach a level where he would be offered a scholarship to pursue a career as a college shot putter. In America, professional sports have a great impact on the thinking of youngsters and their future in sports. Track and field is a lonely sport, especially for the shot putter, who is often all alone off in a corner, not even coached, left to himself and his obsession with a 5.44 kg iron ball. His training is self-generated or he uses tips from other putters and often uses programs described by body builders in muscle magazines. What a waste of talent!!

Finally, I would like to comment that drugs have been the scourge of track and field in the USA. Too many talented athletes have made the mistake of grabbing the “quick fix” which these drugs represent. Many young throwers find it hard to

believe that intense training can result in success without steroids. They reflect the thinking of a great many athletes, because they hear of many elite athletes using steroids. Everyone wants the “quick fix”; thus, we have an abuse of drugs. However, since testing has begun, the distances thrown at university level have dropped dramatically, which is good. Now, the coach is forced to work harder, training his athletes. He cannot fall back on the use of steroids. This will filter down to the novice athlete who realizes he does not have to resort to what I feel is an “unethical act”, taking steroids, etc.

#### Reference

1. Zanon, S. “Plyometrics: Past and Present”, in *New Studies in Athletics*, 1989, 4:1, pp. 1-17.