INTRODUCTION

At Level I we will concern ourselves with the shot put, discus, and javelin. The emphasis is placed on the shot put and the discus since these are the two throws that most Level I coaches will spend the most time coaching. The hammer is not covered at Level I. Interested coaches should obtain back issues of Hammer Notes or The Thrower magazines for information on that events.

It is absolutely critical that safety rules are followed and common sense used when instructing the throws. All four throwing implements were at one time weapons of war. Most injuries occur when an athlete retrieves the implement from the throwing area. Young throwers do not automatically check the area before releasing an implement. Due to distractions at meets, and even during practices, the athlete bending over out in the throwing area may forget that another thrower is in the midst of a throw. Stress the safety aspects first, and you will be greatly reducing the risk of catastrophic injury. If the ground is soft, and the area is to be used afterwards by another group (such as a Physical Education class), common sense requires that holes be filled in. If possible, rope off the shot area so that someone running by does not twist an ankle in holes left by implements. Never tolerate the "clown" who plays around stabbing javelins at people or "winging" shots carelessly.

In discussing the throws, we have the following objectives:

1. Review the basics of technique as described for a right-handed thrower.
2. Go over a basic teaching progression.
3. Describe training drills.
4. Cover the basic rules for each event.
5. Add insights on competition tactics.
6. Review a basic training outline for a year.

For each of the throws, pay particular attention to the description of the POWER POSITION. At the end of every glide, spin, or runup, the athlete must get into a position to throw. In this position, the weight will be on the rear leg, and will be shifted to the front leg during the throwing action. For each throw, the right foot will vary in angle, but the general rule of thumb is that the right heel and left toe will nearly be in line. In order to achieve a good "hip pop", the athlete must learn to pivot the right foot and push his or her right side around by extending the right leg. The left side provides the dual function of "blocking" or stopping the left side, and helping to lift the body by extending itself late in the throw. In the javelin, the right foot must face more towards the throwing direction than in the shot or discus, but the event's overall action is similar to both the shot put and discus.

An athlete must try to combine the longest possible propulsion path with the shortest possible time of movement for optimum results. This may take years of hard work. VELOCITY AT RELEASE is the most important variable in determining the distance of the throw. All of the technical discussion and training programs are aimed at improving the release velocity. The relationship between release velocity and distance is illustrated by the following example:

SPEED OF RELEASE	DISTANCE OF PUT
14.3 meters per second	23.08 meters
14.0 meters per second	22.20 meters
13.7 meters per second	20.76 meters

SHOT PUT

I. BASIC TECHNIQUE

A. Preliminary Position

1. Gripping the shot.
   a. Shot should rest on the base of the fingers.
   b. Spread the fingers out.
   c. Push the shot against the neck, close to the chin.
2. Stance.
   a. Right foot flat.

b. Free arm closed.
c. Shoulders and arms parallel.
d. Eyes focused 10 feet to the rear.

B. Crouch
1. Conventional.
   a. Lower bodyweight onto right leg.
   b. Keep left knee inwards next to right.
   c. Achieve a strong, low an closed position.

C. Glide or Shift
1. Imbalance or unseating.
   a. Sit back towards the toeboard.
   b. Delay leg thrust for an instant.
2. Right leg drive.
   a. Drive hard with the whole right foot.
   b. Extend the left leg in a vigorous manner with a slight diagonal movement towards the board. This is done at the same time the right leg extends.
   c. Right leg is fully extended, then pulled under.
   d. Final contact is from the right heel.
   e. Open hips, but closed shoulders.

D. Throwing or Power Position
1. Landing.
   a. Left toe and right heel.
   b. Hips to the side, shoulders closed in a torqued position.
   c. Right foot between 45 and 90 degrees at or near the center of the circle.
   d. Left foot near the toeboard.
   e. Bodyweight on a bent right leg with the body canted to the rear. Center of gravity over the base.
   f. Each throw is a SUMMATION OF FORCES: from the slower and stronger muscle groups (legs and pelvis) to the faster and weaker muscle groups (shoulder, arm).
2. Throwing phase.
   a. Right leg pivots and pushes the hips to the front, as the weight transfers from the rear leg to the front leg.
   b. After the drive starts, the blocking action of the left leg, combined with an extension of the right leg, causes the needed lift.
   c. Left arm bends, drives downwards and back. It can stay up level with the shoulders and still aid in blocking. Along with a straightening left leg, the backwards moving left arm forms a "block" on the left side.
   d. Throwing arm pushes at the last instant, as a result of the leg and hip action.
   e. The release angle is approximately 42 degrees.
   f. Velocity of the implement at release, angle of release, and height of release are the three most important factors in the effectiveness of the throw. Velocity is the most important component.
   g. Keep eyes focused on elbow of throwing arm to prevent "pulling away" of head.

E. Delivering
1. Release.
   a. Elbow high and in line with the shot.
   b. Vigorous wrist snap with right hand whose thumb is pointed downwards.
   c. Punch with the arm and flip with the wrist.
2. Recovery.
   a. After release, the right leg shifts to the front to check the forward motion.

II. TEACHING PROGRESSION

Chose the shot appropriate for the age and size of the athlete. It is better to learn with a light implement that will not inhibit movement. Emphasize safety first!!

1. Holding the shot.
   a. Place the shot on the base of the three longest fingers. Spread the fingers slightly.
   b. Place the shot firmly against the neck and slightly under the chin.

c. The elbow should be pointing outwards with the arm at a 45-degree angle to the body.

2. The athlete then puts both feet against the toeboard - shoulder width apart - and puts using only the arm. Mark the distance.
3. The same stance as in 2. above, but now add a trunk twist. Mark the distance.
4. The same as in 3. above, but bend the knees, stand up fast, unwind and throw. Mark the distance.
5. Feet parallel to throwing direction with left toe in line with right heel. The feet are pointed 90 degrees away from the direction of the throw. Assume POWER POSITION as previously discussed and throw!
   a. Movement is initiated nearly simultaneously by the right leg and trunk.
   b. The left leg must provide firm resistance by staying in contact with the ground. The thrower should feel as "tall" as possible as he or she comes UP AND OVER the front leg.
6. The next step is to teach the glide across the circle. The purpose of the glide is to arrive in an efficient power position from which the putter can achieve maximum release velocity.
   a. The "O'Brien Shift".
      i. The athlete stands at the back of the circle with the weight on the right foot.
      ii. From this position, the putter drops down on a bent right leg until the back is horizontal.
      iii. The athlete next extends the left leg and foot to the toeboard - keeping it close to the ground - and drives off the right leg.
      iv. The right foot and hips are turned as the athlete is driving across the circle.
      v. The athlete lands in an "X" position: shoulders closed and back with the hips open or to the side.
      vi. The right foot lands in the center of the circle with the left foot offset near the toeboard.

III. TRAINING DRILLS

1. Use light shots with all beginners. Boys: 6 or 8 pounds; Girls: 5 pounds or even a softball.
2. Practice the drive off the right heel by holding onto a post and repeating the straightening and bending action of the leg. Then practice a small hop in this position, while still holding on to the post. However, now have the right leg turn to the side in its correct position.
3. Place a medicine ball near the center of the circle. Kick the ball while extending the left leg in practicing a glide.
4. Do repeat glides in the ring as the athlete works on a solid position in the center.
5. After 3. above is mastered, the athlete can throw after the stop. Hit the position, then finish the throw. Always finish with a few non-stop throws.
6. Towel drill. Place a towel 3 feet into the ring. The thrower has to land on the other side to get his or her right leg under themselves properly.
7. With one end of the towel in their left hand, the coach holds the other end as the thrower glides. This helps to ensure that the left shoulder stays closed and towards the back of the ring.
8. No-arm drill. Throw from a stand without extending the right arm. Keep it near the shoulder. Use the legs and hips to power the shot. This is also an excellent drill for teaching the standing throw.
9. Use a piece of surgical tubing on the right ankle. Coach holds other end as athlete practices glides with resistance.

IV. RULES

1. At the time the athlete takes a stance in the ring to start, the shot shall be held in close proximity to the chin and the hand may not drop during the throw. No mechanical devices may be attached to the hand or arm. Check with officials about meet-specific rules regarding taping of the fingers, hand, and/or wrist.
2. The athlete must pause, after entering the circle, before starting to put. The shot must land inside the 40- degree sector lines (60 degrees for HS) and not on the lines. With ANY part of the body or clothing, the athlete may not touch:
   a. Any surface of the retaining band or toeboard, except its interior surface facing the ring.
   b. Any part of a painted line. This applies to HS only.
   c. The area outside of the circle.
3. You must leave the circle from its rear half.

V. COMPETITION TACTICS

1. Warm-up properly. Approximately five warm-up throws will suffice. Do NOT get the best throw of the day before the competition even starts!

2. Get plenty of rest before the meet. Avoid the weight room. Instead, have the athlete spend this time reviewing strategy.
3. The competition is not over until the last throw. If behind, concentrate on one thing that will gain an advantage for you. On occasion, practice in the rain and get used to a slippery circle. Do not socialize during the competition. Take the event seriously and rehearse what must be done in the ring.

VI. TRAINING

1. Speed of release is determined by two factors:
   a. Strength of the athlete (force) for which a proper training program is therefore necessary.
   b. Mechanical application (technique). As this is the most critical factor in the throws, technique must be "perfected" for maximum mechanical advantage.

DISCUS

I. BASIC TECHNIQUE

A. Preliminary Position

1. Gripping the discus.
   a. Discus in palm, fingers spread, first two fingers closer together than others.
   b. First joints of fingers curl over the rim of the discus.
2. Swings.
   a. Legs bent slightly with weight on balls of feet.
   b. Feet shoulder width apart or a little wider.
   c. Weight shifts from right foot to left as discus is swung back and forth in a horizontal plane.
   d. Upwards movement at the end of each swing with slight downwards movement in the middle of each swing.

B. Turn

1. Beginning.
   a. At the end of the final swing to the right, the thrower prepares to lower and enter the turn.
   b. Left foot, left knee, and left arm pivot as one unit toward the left.
   c. Arms are in line with the shoulders.
   d. Right foot is picked up after the initial movements have started.
2. Jump turn.
   a. The inside of the right thigh leads that leg to the center of the circle, as it pivots around the left side of the body.
   b. The thrower drives off the left foot towards the center of the circle.
   c. Hips advance ahead of the shoulders as a running rotation occurs.
   d. Discus rises off shoulder.

C. Throwing or Power Position

1. Landing.
   a. Right foot lands with an attempt to turn it inward.
   b. Keep pivoting when in contact with the circle.
   c. Weight on ball of right foot.
   d. Left leg lands slightly flexed.
   e. Good, torqued position with discus back.
   f. As in the shot, the objective is to achieve a summation of forces now that the athlete is in a power position.

2. Final phase.
   a. Right leg drives hips to the front and begins this effort right before the left foot touches the ground.
   b. Upper body pulled around by action of the lower body.
   c. As discus reaches low point, the legs drive upwards to provide vertical force.
   d. Left arm bends to aid delivery as it aids in blocking the left side.
   e. Weight shifts to the left leg.
   f. Discus is pulled through in a "slinging" fashion.

g. Discus is released between 34 and 40 degrees.

D. Recovery

1. Right leg usually shifts to the front to check forward momentum.

II. TEACHING PROGRESSION

Choose a discus appropriate for the age and size of the athlete.

1. Holding the discus.
   a. Place palm flat on the discus with the first knuckle over the edge of the discus.
   b. Index finger should bisect the discus.
   c. Place slight pressure on the discus with thumb.
   d. Let the arm hang down and swing the arm around at different angles to allow the beginner to feel that centrifugal force will keep the discus in the hand.
2. Bowling the discus.
   a. This will teach proper release of the discuss off the index finger.
   b. Bowl the discus along the ground. The discus should spin forward out of the hand in a "clockwise" manner
   c. Modify the bowling action by having the thrower flip the discus in the air.
   d. Finish with swings to build confidence that the discus will stay in the hand.
3. Standing throws:
   a. Left shoulder facing the direction of the throw.
   b. Start with discus in front of the left shoulder on the left hand. Swing.
   c. Pivot the right foot hard, turning the right heel out while pushing the right hip to the front.
   d. Emphasize that the center of gravity stays over the right foot.
4. Sink and sling.
   a. Feet together with the weight on the right foot while holding the discus at the side.
   b. Sink down on the right leg, slide the left foot back about 24", lean forward and throw the discus back to shoulder level.
   c. When the discus reaches the "top", the right foot pivots hard turning the right hip to the front, pulling the discus in a wide arc at shoulder level.
   d. The discus should be released without reversing the feet.
   e. Attempt to keep the center of mass over the right foot throughout the whole turn.
   f. At the time of release, the chest, hip, knees, and toes face to the front.
5. The 1 1/4 turn.
   a. Stand at the rear of the circle and sideways to direction of the throw. Feet should be comfortably apart and knees slightly flexed.
   b. Transfer weight to the left foot, pivot, and make a running sprint across the circle to land in a good throwing position.
   c. Teach this as a "whole" action. Stress rhythmic acceleration across the circle.
6. The full throw.
   a. The athlete stands at the rear of the circle, facing away from direction of the throw.
   b. Start in a BALANCED POSITION and shift the weight to the left in order to initiate the turn.
   c. At the same time the weight is shifted to the left, the right foot must be picked up and swept around to the middle of the circle.
   d. Steps to achieve this:
      i. Walk through the turn.
      ii. Walk through while emphasizing balance on the left leg at the back and on the right leg in the middle.
      iii. As in ii., but with knees flexed.
      iv. Gradually add speed.

III. TRAINING DRILLS

1. 90 degree drill. Move the right foot and leg 90 degrees, place it down, move to 180 degrees, place it down. The next 90 degrees will find the thrower in the center of the circle. Now move the left foot 90 degrees, then the right again, and that is the power position.

2. Wheels.

a. Right foot in center of the circle pointing in the direction of the throw, right knee bent and heel is off the ground.
b. Left arm reaching to front below the shoulder height with the right arm holding discus in front of the body.
c. Swing right arm back, as the discus reaches the farthest point behind the body, begin the push from the left foot.
d. Maintain the angles of the right leg and foot.
e. Push from the left foot to make the hips move atop the right leg.
f. Continue movements over right leg by moving right hip in direction of throw.
g. Left knee "tucks" in behind the right knee.
h. Feel left foot move beyond right lower leg.
i. "Wheel" left foot for a heel-toe relationship.

3. South African drill. Discus is carried in front with the wrist bent for support. Begin with right leg behind the left, and pivot into the power position, and finish with a throw. Walk forward, doing continuous reps. The next progression is to run into it. This drill can also be used before the 1 1/4 turn in teaching progression.
4. Other implements. Such as traffic cones, small bars, etc. These can be thrown while delaying the upper body as much as possible to really feel the "hip pop" so critical to a throw.
5. Weight shift at beginning. Practice this by swinging the discus all the way back with weight on the right leg, then swing to the left with weight on the left leg. Throwers will squat a little in the middle of the swing.
6. Without discus. Stand facing throwing direction. Drive, as in the South African drill, and then attempt to have the feet land in a power position at the same time.

IV. SAFETY CONSIDERATIONS

1. Without proper control and supervision the discus can be a very dangerous event. Use the following procedures when teaching, to ensure safety:
   a. No one should throw until given a specific command to do so.
   b. No one retrieves a discus until given a specific command to do so.
   c. The discus must not be released in any, other than the specified, direction.
   d. Do not throw the discus back towards the circle or original throwing point - always carry.
   e. Make sure the implement and throwing surfaces are dry.

V. RULES

1. The discus must be thrown within a sector: 60 degrees in High School, 40 degrees in College, National, and International competition. As in the shot, there must be a pause after entering the ring and prior to commencing the throw.
2. The thrower must not touch any part of a painted line or the top of the retaining band used to outline the circle or any part of the ground outside of the circle.
3. The thrower must leave from the rear half of the circle and under control. This is the most common violation!

VI. COMPETITION TACTICS

1. Work on balance and relaxation in training.
2. Aim for a series of good throws in training to show that technique is sound. This sound base prepares the athlete for a confident performance.
3. Train in bad weather to prepare for all possible conditions - particularly windy days - so that the necessary adjustments can be made in competition.

JAVELIN

I. BASIC TECHNIQUE

A. Approach
1. Grip.

a. The "Finnish" grip is very effective, but the "fork" or "V" grip, and the "American" grip are useful.
b. The javelin is held horizontally at or near level.

2. Run.
   a. Most throwers use 8 to 14 strides.
   b. Maintain control in the run.

B. Transition

1. Withdrawal.
   a. Use straight pullback.
   b. Withdraw as left leg hits mark and count 1-2-3-4-5.
   c. Rotate shoulders to side. Keep hips at about 45 degrees.
2. Steps.
   a. Keep eyes straight ahead.
   b. Point of javelin near head.
   c. Be aggressive, especially on count three.
   d. Keep palm up.
   e. Shoulders/hips separated.
3. Cross step.
   a. Right leg is soft, bent on landing.
   b. Right leg usually points towards 45 degrees.
   c. Achieve body lean from drive of the right leg before plant.
   d. Keep palm up.

C. Throwing Action

1. Beginning of throw.
   a. As weight passes before the right foot, a vigorous push/rotation is started.
   b. Right leg drive is completed before the left is firmly planted.
   c. Left foot lands heel first, with a slight flex.
   d. Right foot finishes drive as left leg blocks.
2. Arm action.
   a. Elbow comes through high and over the shoulder line.
   b. Throwing shoulder is like a whip handle.
   c. Release occurs near front foot and as high as possible.
3. Release.
   a. Javelin is released at about 27 to 35 degrees.
   b. Throwing hand rotates right (inwards) after release, achieving a "thumb down" position.

D. Recovery

1. As with the other throws, the feet shift and the center of gravity is usually lowered.

E. Important Note

1. Before the athlete throws the javelin, explain that the elbow should always be above the shoulder at release. A side-arm throw in the javelin can cause injury to the arm.

II. TEACHING PROGRESSION

1. The grip.
   a. The "Finnish" grip is preferable.
   b. Second finger wrapped behind the binding, the thumb and middle finger behind the edge of the binding with the other fingers on the binding.
   c. The javelin will rest across the hand.
   d. It should be held as if it was a wet bar of soap. Do not squeeze fingers on the shaft.
2. Relate back to power position.
   a. Have athlete throw a small weighted ball. Emphasize the action of the leg initiating the throw.
   b. Emphasis should be on finishing with shoulders square to the direction of the throw and a lifting on the left side.
3. Move to the standing throw with the javelin.
   a. Feet in power position.
   b. Javelin in position to throw, palm up, head facing front, hips and shoulders to the side.

c. Initiate the action by slightly lifting left leg off the ground.
d. Keep the weight on a bent right leg.
e. Drive the right leg hard. Pivot on the ball of the foot. Ground the left heel first.
f. The hips will rotate to the front with the shoulder, arm, and hand to follow.

4. One step throws.
   a. Place weight on the right foot.
   b. Step forward with the left foot plant and follow with #3 above.
5. Two step throws.
   a. Start with weight on left foot.
   b. Plant the right and follow #3 above.
   c. "Left - right - left" or "three - four - five".
   d. Keep the feet pointed in the direction of the throw, except for the "four" count "right" foot which is the throwing stride.
6. Three step throw.
   a. Start on the right foot.
   b. "Right - left - right - left" or "two - three - four - five".
   c. Emphasize reverse "C" or bow position on landing.
7. The whole throw.
   a. Use first check mark at start of approach run.
   b. Use second check mark as transition begins.
   c. Rhythm is: "left -- right -- left -- right - left" or "one -- two -- three -- four - five" and throw.

III. TRAINING DRILLS

1. A medicine ball can be used for almost every aspect of the throw.
2. Throw weighted balls. Keep the weight at 4 pounds and under.
3. Hip drill. Exaggerate your throwing position without an implement. Bend right leg way down, keeping both feet on the ground. Come up and drive the hips forward at the same time. "SNAP". Get the hips to come forward quickly. Drop back again and repeat.
4. Exercises with a javelin:
   a. Pulls with a partner holding the tail end in different positions of the throwing motion.
   b. Place the javelin tip against a wall and the arm is forced back, getting into the delayed arm position.
   c. Throwing into a hillside.
   d. Stretching exercises.
   e. Lighter implement for arm speed.
5. Bounding drills. Described in a modern coaching manual - particularly the jumping section - there are many variations incorporating both single and double leg responses.
6. Wall pulley. Use the regular handle or make a grip from a broom handle, and situate the pulley such that it operates at 30 degrees to simulate the throw.

IV. RULES

1. The javelin must be held only by the whipcord grip at release.
2. The javelin must be delivered using an overarm action above the shoulder.
3. In High School the first point of contact is marked. In College, National, and International meets, the tip must contact first or it will be ruled "flat".
4. Sector is 40 degrees.

V. COMPETITION TACTICS

1. Be aware that this event is marked by inconsistency. Work hard at establishing a consistent technique.
2. Avoid giving the athlete an approach that is too long. The key to making any approach functional is in the acceleration into the throw.
3. As in the discus, throw on windy days so that the athlete is aware of how this affects the javelin.

THROWS PHILOSOPHY

Ideally, the youngster should be very athletic, explosive, strong and have physical size (not fat). It is commonplace at the high school level to place the overweight individual in the throwing events, especially on the girls' teams. It would be better to take the 5th-string sprinter and place them in the throws, assuming that they have some size, and they would of course have some natural quickness. Being overweight does not preclude the athlete from being successful, as they may very well be explosive and strong. However, often times the overweight are slow. The ingredient the coach should look for first is explosive power, then size. Strength is the easier ingredient to develop.

Physical education classes provide opportunities to identify potential throwers. The AAHPER fitness test is one instrument that most schools administer, providing a good source of data identifying explosive leg power, foot speed, agility, and basic overall strength. There is some correlation between the standing long jump and success in the throws. As an example, it has been found that a male freshman in high school who can jump 8 feet will be successful in the throws, all other factors being equal (size, strength, technique, etc.).

The most important coaching objective is the seeking of knowledge in the technical aspects of the throwing events, as well as in the methods and means of developing maximum strength and explosive power. A coach can only help an athlete reach their peak performance and experience the success they deserve through increasing their own knowledge and applying newfound insights as they coach.