1

Coaching Philosophy
Coaching Philosophy

It all starts with the program philosophy-

Use experience, knowledge, values, beliefs and judgment to help student-athletes achieve goals - academically, athletically and personally. Blend the art and science of coaching and teach the basics to the athletes. Plan, implement and evaluate scientifically proven training methods, use goal setting and have a plan of action for each student-athlete. Build solid relationships with the student-athletes based on respect and common goals.

The ultimate objective is for the student-athlete to have a positive experience, and be prepared for success at the next level of life.

**Coaches Practice Plan**

Daily practice summary-

• Discuss practice objectives before every training session

• Encourage decision-making during practice

• Present acquirable skills during the session

• Look for doable parts of the challenge

• Review objectives after the training session

• Preview for next training session

**Athlete Planning**

Summary of habits athletes can develop

• Routines: Develop ritual based on logic-set up: have practice and competition routines

• Strategy: Plan for anything and everything

• Visualize: Feel the event/See the event (like a movie)

• Focus: One thought to no thoughts in during attempt

• Composure Level: Relaxation versus anxiety-optimum performance level

• Reflect: Achievements of the day and plan for next day

**Coaching and Mentoring**

Coaching and mentoring student athletes is an important role. It is not just about great coaching drills and technique, coaches need to focus on establishing good habits during track and field practice and mental preparation.

Coaches and athletes need to work together to plan for every practice and competition.
Warm Up Design
Warm Up Design

Why Warm Up
Athletes need to warm up for specific activities in the training session.

Warm up drills are designed to prepare the body for the training session and improve the athlete’s ability to perform at a high level.

Proper warm up exercises will help develop the five bio-motor abilities as well as prepare for the daily workload.

- Strength
- Speed
- Endurance
- Flexibility
- Coordination

Daily Warm Up Progression
Warm up exercises progress from general to specific movements and can include several elements.

Common warm up elements
- Dynamic flexibility
- Hurdle mobility
- Sprint drills
- Plyometrics
- Medicine ball throws
- Event specific drills (speed, strength or endurance)

Warm Up Phases

Designing the start of a practice session for athletes includes warm up drills to prepare for the activities of the training session.

The warm up is broken up into three phases

Phase one-
Low intensity exercises and flexibility (4-6 minutes)

The start of the warm up is active with low intensity activities, such as arm circles, easy skipping or walking toe touches. The initial exercises are controlled, focusing on raising the body temperature slowly and developing a full range of motion from head to toe. The exercises are stationary or up to 30 meters in length. The recovery between exercises is about 10-20 seconds and the first phase of the warm up is about 3-5 minutes.
Phase two-

High intensity exercises (3-5 minutes)

Then the general activities will increase intensity and speed. Athletes will advance from the initial low intensity active exercises to more dynamic movements, such as A-skip, high knee running, bounding or medicine ball throws. The exercises during the second phase of the warm up range from 20-40 meters, with a walk back recovery.

Phase three-

Event specific exercises (5-20 minutes)

The final phase of the warm up is event specific preparation activities. Coaches can add specific elements to the final phase of the warm up to develop speed, strength, or technique.

Sample general routine (warm up phase 1 and 2)

Walking exercises 2x30 meters each

• Walking quad stretch
• Walking side lunges
• Walking high kicks

Skipping 2x30 meters each

• Skip forward for distance
• Skip backward with leg extension

Jumps x10 each

• Ski jumps over the lane line
• 5 double leg hops

Throws x10 each

• Medicine ball-kneeling overhead throw
• Medicine ball-forward throw for distance

Acceleration runs x4

• 100 meters (start at 60%, build up 10% per 10 meters)

Sample event specific exercises (warm up phase 3)

High school boys shot put (circuit x2)

• X 10 repeat gliding to power position with barbell (45 pound)
• X 10 each way-kneeling shot put throws (10 pound)
• X 10 shot put throw for height (10 pound)
Warm up design

Warm up design is important as training design. Each warm up should have a theme and purpose to help develop bio-motor abilities; event specific needs and prepare for the training session.

There are many reasons why a proper warm up for athletes is needed.

Building endurance, flexibility and coordination are common themes in the general preparation phase. The focus on speed and strength is commonly developed during the warm up in the competition phase.

Event specific training is done year around, starting with specific endurance during the specific preparation phase then specific strength during the competition phase. Finally, specific speed is refined during the peak phase.

Warm up progression (week 1 to week 12)

Training phases and bio-motor focus (3 weeks per phase)

- Phase 1-General Preparation: endurance
- Phase 2-Specific Preparation: coordination and flexibility
- Phase 3-Competition: strength
- Phase 4-Peak: speed

All bio-motor abilities are part of the daily warm up, however, each phase can have a focus to develop within the training plan.

Warm up time

- Short duration (8-12 minutes) to longer duration (13-20 minutes)

* Warm up time can vary depending on climate, fitness level, training volume/intensity and other individual factors.

Recovery

- Short recovery between exercises to longer recovery

Exercises type

- General movements to more sports specific movements

- Vary the exercises and order from week to week

Volume and intensity

- High volume and low intensity during the general preparation
- Medium to high volume and high intensity during the specific preparation
- Medium volume and medium intensity during the competition and peak

Competition warm up

Athletes use the same exercises for competition warm up, however, since the intensity of competition is greater than training, a more intense and longer warm up is required. It is best to experiment with various warm up lengths and intensities to develop the best individual or team warm up plan.
-Sample warm up (12 week plan)

Track and Field Sprinters

<table>
<thead>
<tr>
<th>Phase</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>3 weeks</td>
<td>3 weeks</td>
<td>3 weeks</td>
<td>3 weeks</td>
</tr>
<tr>
<td>Training Volume</td>
<td>1320 meters</td>
<td>780 meters</td>
<td>530 meters</td>
<td>430 meters</td>
</tr>
<tr>
<td>Recovery</td>
<td>15 seconds</td>
<td>30 seconds</td>
<td>2 minutes</td>
<td>3 minutes</td>
</tr>
<tr>
<td>EXERCISE</td>
<td>Sets/reps</td>
<td>Sets/reps</td>
<td>Sets/reps</td>
<td>Sets/reps</td>
</tr>
<tr>
<td>Walking lunges</td>
<td>2x30m</td>
<td>2x30m</td>
<td></td>
<td>1x20m</td>
</tr>
<tr>
<td>Backward lunges</td>
<td>2x30m</td>
<td></td>
<td>2x20m</td>
<td>1x20m</td>
</tr>
<tr>
<td>Walking quad stretch</td>
<td>2x30m</td>
<td>2x30m</td>
<td>2x20m</td>
<td>2x20m</td>
</tr>
<tr>
<td>Walking hamstring curl</td>
<td>2x30m</td>
<td>2x30m</td>
<td>2x20m</td>
<td>2x20m</td>
</tr>
<tr>
<td>Jogging grapevine</td>
<td>4x30m</td>
<td>2x30m</td>
<td></td>
<td>2x20m</td>
</tr>
<tr>
<td>Skip for distance</td>
<td>4x30m</td>
<td>2x30m</td>
<td>2x20m</td>
<td></td>
</tr>
<tr>
<td>Backward skips</td>
<td>4x30m</td>
<td>2x30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking high kicks</td>
<td>4x30m</td>
<td>2x30m</td>
<td>2x20m</td>
<td>2x20m</td>
</tr>
<tr>
<td>Max V skip</td>
<td></td>
<td></td>
<td>2x20m</td>
<td>2x20m</td>
</tr>
<tr>
<td>Fast leg-single</td>
<td></td>
<td>2x20m</td>
<td>2x20m</td>
<td></td>
</tr>
<tr>
<td>Accelerations 10%+ 10m</td>
<td>6x100m</td>
<td>6x60m</td>
<td>5x50m</td>
<td>3x50m</td>
</tr>
</tbody>
</table>
3

Speed Training
Speed Training For Track and Field

Principles of Track Workouts For Speed

Speed development

• All runners need speed
• Great sprinters have 100-400 meter range
• Sprint fast in training to sprint fast in competition

Training elements

• Train to race and compete
• Train race tempo
• Train strength and power
• Train athlete abilities
• Train race specific speed

Training sprinters

• Acceleration Phase
• Maximum Velocity Phase
• Training Methods
• Planning Overview
• Quality over Quantity
Types of Track Workouts For Speed

**Acceleration phase**

Train to overcome inertia from static position

Train rhythm of the run with acceleration line drill

Acceleration training with starts

- 2-point start
- Rolling start
- 3-point start
- 4-point start
- Block starts
- Half starts
- Resistance starts (10-40 meters)

**Maximum velocity phase**

Train top end speed

Develop higher tolerance for faster paces

Train in 20-30 meter segments

Use various build in distances

Acceleration 20-40 meters + 20-30 meters Max Velocity

Train maximum velocity rhythm with wicket drills
Acceleration and Maximum Velocity Training

- Ins and outs
- Resisted runs
- Assisted runs
- Power training

**Ins and outs**

30-meter acceleration-sprint 10-15 meters - off 15-20 meters - sprint 10-15 meters (3-4 minute recovery)

Sprint phase: go for maximum speed, maintain sprint mechanics

Off phase: decrease intensity and cadence, maintain body positions

*use cones for changes in speed

**Resisted runs**

- Weight vest (up to 10% body weight)
- Sleds (pulling weight) combine with start options
- Hills (short or long depending on training component)
- Stairs (develop acceleration and max velocity)
  (3-4 minute recovery)

*change the intensity with more weight or higher slope grade

**Assisted runs**

- Bungees and pulley for overspeed
- Downhill sprints 1.5- 3% slope grade
  *60 meters or less (under 6 seconds)

* speed within 10% of personal best
Power Development For Speed Training

Power training (jumps)

- Standing long jump
- Standing triple jump
- 3 double leg jumps
- 5 double leg jumps
- 10 double leg jumps

Power training (bounding)

- Acceleration bounds
- Max velocity bounds
- Single leg bounds
- Speed bounds
- Long bounds

Power training (throws)

- Overhead shot throw for distance
- Forward shot throw for distance
- Forward medicine ball throw for height
- Hammer style throws for distance

Power training (jump/throw combo’s)

- Hop – hop - forward shot throw
- Hop – hop overhead throw
- Backward hop – backward hop – overhead throw
- Backward hop – backward hop - forward throw
- Hop - hop - throw for height

Power training (jump and/or throw/sprint combo’s)

- Hop – hop – forward throw into sprint 10 meters
- 3 double leg hops into sprint 10 meters
- Forward throw –into sprint 20 meters
- Acceleration bounds 10 meters into sprint 10 meters
Starting Blocks
Starting Blocks For Sprinters

Whether you watch the greatest sprinters of all-time like Usain Bolt and Carl Lewis, or high school sprinters: the start is a key factor for a great race and it all begins out of the blocks.

Starting blocks are used in the sprinting events up to 400 meters and both hurdle races in track and field. The block start is broken down into three phases for the track and field runner: alignment, set position and start.

Alignment

Front pedal is set two steps away from the start line of the race.

The back pedal should be three steps way from the starting line.

The sprinter will back into the pedals and firmly place the feet into the block pads; the top of the spike shoe should be on the track with the front foot.

After firmly placing the feet into the blocks, the sprinter will kneel down on the rear leg and place the hands just behind the starting line slightly wider than shoulder width apart. The fingers are held together, with the thumbs in, like a bridge. The hands should be placed with the thumbs under the shoulders ready to support the runner’s bodyweight.

The sprinter should look down, with the back of the head and spine in a straight line.

Set Position

On the “set” command from the starter, the runner slowly rises up. The hips will rise slightly higher than the shoulders; the bodyweight is shifted forward over the shoulders. The arms are straightened with the hands supporting the runner’s weight. The feet maintain pressure on the blocks with the tip of the shoe still on the track.

If you look at knee angles, the front knee is bent between 90 and 100 degrees. The rear knee has a bend of 120-135 degrees. The angle can depends on the strength level of the athlete; often younger athletes with a limited training base will have the hips rise up more during the set command.

Start

The back leg is driven forward at the sound of the gun as the front leg extends, pushing off the block pedal. The arms are aggressively extended, forward and back. If the rear leg is the right leg, the left arm is driven forward as the right arm is driven back. The head stays neutral on the start, looking down the track slightly.

The body is thirsted forward and slightly upward at the start of the race.

Once the runner is out of the blocks the drive phase begins.

Block Start Tips

- Keep the body in proper alignment.
- The block start is smooth and forceful.
- Drive the body forward, at the start.
- Snap the feet down quickly after the start.
200 meter start

The 200 meter runner should turn the back part of the blocks out slightly, then the sprinter can drive straight out of the blocks and move down the track a few steps before curve running begins.

100/110-meter hurdle start

Generally, eight steps are taken to the first hurdle. In a short sprint race, a typical drive phase might last 30 meters. In the short hurdle race, the drive phase can last until the third hurdle but the hurdler must get tall sooner to clear the hurdles.

The hurdler has to drive up more to be in position to attack the first hurdle in the race. The runner will increase stride frequency to get the body in better position to clear the first hurdle.

Hurdle start tips

- Maintain proper mechanics and alignment.
- Slowly rise up to meet the first hurdle.
- Focus on stride frequency to the first hurdle.

Basic Teaching Progression (block starts)

1. Standing start without blocks (hands in opposite direction of feet)
2. 3 point stance without blocks
3. Standing start with blocks (hands on the knees)
4. 3 point stance with blocks
5. Block Start

Block start review

- Properly position the body with the blocks
- Focus on proper body alignment and angles in the set position.
- Drive forward out of the blocks.
- Maintain body position into the drive phase.

The proper block start is important part of track and field training and will set up the drive phase of the sprinting and hurdle events.

From beginners to Olympic level runners, the block start is critical for a successful race.
Sprint Relays
Sprint Relay Training

General Philosophy

Our philosophy is that we can beat most teams in the 4 x 100 by utilizing superior exchanges that have been honed to a fine edge.

This includes opponents with superior foot speed. In the 4 x 200 the exchanges will also make a difference against teams of equal or slightly superior speed.

Get Your Steps

Once in good condition we need to get our steps down for the exchange. In the 4 x 100 the method is to count 20 steps back from the back of the Olympic exchange and mark that distance. (The steps listed here are guidelines. We have used as many as 24 steps with some individuals) The steps are toe to heel steps. You will proceed back to the end of the Olympic zone and assume the correct starting stance (slightly crouched, feet staggered with toes pointing forward, hips parallel with the exchange zone line, head turned to view the mark.)

When the incoming runner hits your mark (20 steps back) you will take off full speed and not look back.

The incoming runners job is to catch you and give the command “stick”. In the 4 x 200 the method is basically the same except that the steps are different. From the Olympic mark you will count up 10 steps and mark the distance. (Again this could vary some)

This is where you will position yourself and the Olympic mark becomes the mark you watch. You can also put tape here but we usually do not. When the in coming runner hits that mark, you take off. From then on the exchange process is the same.

Again each team or group of runners may need to adjust your steps depending on personnel. It’s important to remember that once the exchange is completed to wait in your lane until all other teams have exchanged before leaving your lane. This is especially important for the first and third runners who exchange on the curve.

Exchange Process

The key to the exchange is the arm and hand coordination of both runners. The in coming runner must first catch the out going runner. As he does so he must watch the arm action of his teammate. The “stick” command should be given when the receiving arm of the out going runner is moving forward. (A common mistake is to call “stick” too soon, causing the outgoing runner to put his hand back too soon) This gives the runner the split second needed to get his receiving arm and hand back to receive the pass. If done correctly neither man will have to over reach and break the rhythm of their arm action. When receiving the baton the out going man should give his teammate a good target by getting his receiving hand up. This is accomplished by keeping the elbow straight, extending the receiving arm out and slightly bending at the waist.

If the incoming runner misses the target don’t keep the arm back but rather continue the arm action and wait for another “stick” command. You have the entire zone to make the exchange, don’t give up if it is not made the first time.

We spend part of at least 3 practice sessions per week on the sprint exchanges. If you overlook this part of your workouts you are missing the opportunity to score very valuable points for your team.
High Hurdles
Hurdle Speed Workouts
Drills and Training

Hurdle Technique Drills

Wall drill (lead leg)
Stand 4-5 feet from wall with short box between athlete and wall. Drive lead leg forward and lean so you end up with the foot against the wall. The box will not allow hurdler to straight leg his approach.

Forces hurdler to get lead leg down and get better turn over. Also helps hurdler who has trouble getting 3 steps.

Helps get lead leg up quicker and helps when a tail wind pushes them closer to hurdle in a meet.

Trail leg w/partner push
Partner holds foot and knee and PUSH it thru to front of hurdle

Partner trail leg resistance
Athlete leans against a wall with trail leg back. Partner gives resistance to trail leg pulling through then pushes knee all the way to the front.

One step drill (lead leg)
6-8 hurdles approximately 7-10’ apart-must bring lead foot down, take one stride, then take off over next hurdle – x5-8 sets

Hurdle Endurance Drills

5 step endurance hurdle drill
5 step drill over 12 hurdles

5 step drill
Over 4-6 hurdles-5 step between (easy, easy,fast, fast,fast)
10 sets with 60-90 second recovery

14 hurdle drill
Set 14 hurdles 8-10 meters apart
3 step x4-5 times-walk back

Ladders
Sets of different hurdles-hurdles 1-3-5
10 sets with 60-90 second recovery
To The First Hurdle Drills

**Good Monday drill +300m**
From blocks 5 x 1 hurdle, 4 x 2 hurdles, 4x 3 hurdles

1x 300m 90%+ (no hurdles)

**Jamming drill**
Hurdle 1 at same distance-move #2 1’ closer, #3 2’ closer #4, etc.
Sprint 30+ meters then go over last 4 hurdles

**Chase drill**
3 hurdlers in blocks. One starts when he says GO and the others must chase and try to keep form-over 2 to 3 hurdles.

**Speed between hurdles drill**
Use only hurdles #1,3,5. first hurdle at regular spot, #3 set 4’ closer to first, #5 is 8’ closer to 1st-builds speed between hurdles

**3 hurdles and start**
Block start over 3 hurdles + 50 meter

**Hurdle Drills with Multiple Hurdles**

**Steps between hurdles**
3-3-5-5
5-5-3-3
3-5-3-5
3-3-3-5-5-5

-Cong can vary height and distances

**3 step - 5 meter drill**
Set hurdles at 5 meters, use 3 steps

**10 step to first hurdle drill**
Start 16.5 meters from first hurdle-(2.78m back of starting line)
Purpose to increase velocity over hurdles # 2-3-4 or more

**1-3 5 sprint hurdle drill**
Use 7 sprint strides between hurdles-set #3 hurdle 3 feet closer to #1 and set #5 hurdle 8 feet closer to #1.

**5 step drill**
Over 4-6 hurdles-5 step between (easy, easy, fast, fast, fast)

**Last 4 hurdles**
Sprint first section of the race and go over the last four hurdles
8 hurdle drill
8 hurdles at regulation height then sprint 60 meters off #8

Hurdle Training Samples

• Starts over 3 hurdles x3
• Starts over 4 hurdles x3
• Starts over 5 hurdles x3
  ○ 3 to 4 minutes rest between each start

• 5 sets x starts over 5 hurdles
  ○ 3 to 4 minutes rest between sets

• Lead leg over hurdles x3
• Trail leg over hurdles x3
• Over the hurdles x6
  ○ 90 second recovery

• 4 sets x starts over first 5 hurdles
  5 minute recovery

• Starts over 3 hurdles x2
• Starts over 5 hurdles x2
• Starts over 7 hurdles x6
  ○ 3 to 4 minutes rest between each start

Lowering hurdles (men)
1 x 10 hurdles at 39", 2 x 6 at 36" 2 x 3 at 36"
Or
1 x 10 hurdles at 39" 1x10 at 36" 4 x 6 at 36"
10 minute recovery

Hurdle training and rhythm

High hurdlers need to focus on a fast rhythm. It’s easy to get caught up in just your hurdling and staying in a comfortable rhythm. Your athletes need to learn to break through that comfort zone and be a sprinter.
Distance Running Technique
Distance Running Technique

Proper biomechanics for distance running is important to maximize the body’s energy and help prevent injury. Teaching proper running form and making technical adjustments are critical factors in developing the highest level of performance.

Keys to Proper Running Form

Head
• Look straight ahead with the chin slightly down
• Keep face relaxed and loose

Posture
• Keep tall
• Square shoulders
• Keep the body inline

Arm Action
• Hands to shoulder height on the forward swing motion
• Elbows back to the hip
• Forward and back, avoid any cross body motion
• Hands cupped but loose

Legs
• Strike the with the middle of the foot
• Land the foot directly under the body
• Bring the knee and toe up
• Lift the heel to the hamstring
• Be active driving off the ground with each stride

Teaching proper technique early was one of key ingredients to the success of Galen Rupp. Coach Alberto Salazar worked with Galen Rupp for 12 years before he won the silver medal in the 2012 London Olympics in the 10,000m.

Coach Salazar emphasized technique because of his own failures as an elite athlete. “I know that my lack of proper technique and biomechanics caused me to get a lot of injuries and shortened my running career,” said Salazar.

Best Coaching Point
• Runner’s must focus on running tall, one of coaching points repeated by Bill Bowerman, the legendary coach from the University of Oregon.

Making Changes in Running Technique

Runners that make changes later in their career could be at higher risk for injury, but the long-term benefits can make a significant difference in performance.
Coach Salazar spoke about one of his athletes, “When you start changing an athlete’s form, there’s always a risk,” Salazar said, “he’s willing to take that risk, because he doesn’t want to be the guy that’s just trying to get a bronze medal. Not this time. This time, he wants to be the winner.”

Adjusting running technique is a risk-reward proposition for coaches and athletes: possible improvement in performance versus a greater risk for injury as the body adjust to the new style.

**Distance Running Like A Sprinter**

Top distance runners need to use outstanding running mechanics and follow the technical formula for used by sprinters to help with speed development in training and during critical pace changes during a competition.

Watching film of Olympic Champion Haile Gebrselassie, Coach Salazar noticed, “His hips are directly under his body, which is directly above his foot. So all that force is going up through his legs and hips into his upper body, to propel him forward. There’s nothing being lost there.”

The positions of the elite distance runners are very similar to the top sprinters, long strides with a full range of motion from the knee drive to the heel going back to the buttock, then reaching for the ground and striking the foot back under the body.

As Salazar watched tape of top runners like Olympic Record Holder Kenenisa Bekele, he was reminded of world class sprinters, “The more tape we broke down,” he said, “the more it became clear: he was harnessing the same advantages as a sprinter.”

“I thought, is that just coincidence? Or could that perhaps be part of why he’s so good?”

**When it comes to distance runners developing speed, biomechanics considerations are vital to the runner’s success.**

**Review**

Overall, proper running mechanics will help improve performance and reduced the risk of injuries.

Distance runners cannot run the same as sprinters during long races but distance runners can develop similar mechanics.
Training Distance
Runners
Training High School Cross Country Runners

Developing a cross-country program at the high school level requires careful attention since governing bodies in most states limit preseason activities for a season that is invariably shorter than that of other high school sports. Books dealing with the training of world class athletes are less than helpful, not only because of the vast physical differences, but mainly due to the limited period given to the high school cross country coach.

While a well-established program may have the athletes training in groups during the summer, many coaches are faced with a group of poorly conditioned cross-country hopefuls. The great New Zealand coach Arthur Lydiard would have his elite athletes run long runs over various terrains for at least ten weeks (about the length of a high school season) just to get them prepared for what he would call training. He felt that the key to cross country progress is aerobic capacity. When we were fortunate enough to get the opportunity to spend several hours alone with Lydiard a month or so before he died, we discussed this philosophy as it concerned high school athletes. He was adamant that putting in the miles is the key to success. These runs are generally done at "talking pace" which is a speed that increases as fitness increases. This long distance training forms a base upon which the real training program can be built. Opponents cry out that runners cannot learn to run fast by running slowly, but the base is merely a conditioning process to prepare the entire body to be able to handle a very intense workload. Where some coaches go wrong is they will see measurable increases in speed with the endurance phase and, therefore, neglect the faster tempo and speed work, which is necessary to gain optimum performances for the championship races.

An essential ingredient, then, in building a successful high school cross-country team is a summer training program. In some states coaches can be directly involved, while in others they must have no contact at all. Team captains can conduct summer runs. This takes the coach out of the equation and helps develop a sense of camaraderie and team unity. In most programs the athlete’s meet at a chosen location three to five days a week and then split into groups based on ability. The runners set out on their respective courses for a given number of miles or minutes. For developing a sense of "team," choosing minutes works out better as everyone finishes at the same time no matter how far they have run. Finishing at the same time allows runners of all abilities to do the stretching and core strength exercises as a unit.

To reach the highest levels, top high school runners usually log between 50 and 90 miles a week during the off season with less mileage run during the weeks of higher intensity training. These athletes add mileage each year to their weekly totals. Most freshmen aren't prepared to handle the same mileage as a senior, especially when the intensity increases. Most programs continue to include a long run each week to help maintain the aerobic development. Many of the top high school programs also include an easy team run before school each morning.
Ideally, the coach greets a group of youngsters who are fit and ready to go after having trained throughout the summer. Realistically, many still fall far from this category. What these kids need is a bit of fairly easy distance running to prepare their systems (muscles, tendons, lungs, heart, and self confidence) for competitive training. For some kids, that means most of the season will involve getting ready to start training. For the better prepared, faster workouts will be started almost immediately. It is essential, though, that high school runners build as strong a base as possible before high intensity runs.

What happens when the regular season begins varies tremendously among the top programs. Some have succeeded with high mileage programs (this term includes distances from 50 miles per week to well over 100). Others emphasize fast runs, and still others base their workouts on a very small amount of running with high emphasis on a series of drills.

Fortunately, there are a large variety of activities available to steer your athletes toward success. Physical fitness can be improved in more ways than simply running. Core strength can be increased through specific exercises, various drills can improve neuromotor skills, correct stretching exercises can increase stride length, and specific running drills can increase stride rate and efficiency.

During the cross country season a coach can use a variety of workouts to help improve anaerobic fitness and to prepare the runners for races. These workouts (examples listed below), such as mile repeats, kilometer repeats, Oregon drills and sharpening speed, give coaches plenty of different options for helping the athletes peak at the highest level at the right time. Athletes, typically, should start the season with longer repeats which add up to a bit more than the distance of the athlete’s race (5,000 meters for most states) and run each interval at date pace (level of the athlete at the current time) or just below goal pace. During the middle of the season as the team approaches conference championships, athletes are running intervals that add up to race distance and are at race pace or goal pace per repeat. During the peaking stage, the athletes will be running repeats faster than goal pace in a shorter overall length than the race itself.

Areas often overlooked in coaching high school distance runners have nothing to do with workouts, drills or exercises. The most important intangible for high-level success is "expectations." No matter what the sport, the coaches who produce championship teams every year are those who truly "expect" their athletes to succeed. While some are hoping to place high in their respective league championships, the kids in the top programs are certain that they have a chance to win the state or national championship. Former Mead High School (Spokane, WA) coach Pat Tyson always started out the cross-country season with the statement, “We are going to be state champions this fall.” This happened 16 times during his 23 years at Mead. Expecting to win was the key.

Another non-running key to success is for the coach to ensure that all members of the team feel important. The best athletes in all sports gain the most recognition, but cross-country is a unique sport where the slowest runner may never outrun anyone, yet that runner can work hard and at the least improve. A good coach will note kids with these improvements and create a team with all sorts of winners.
Workouts For High School Distance Runners

Mile repeats: Mile repeats can be done on the track, at a golf course or on a maintained trail. Take 2-3 minutes rest in between each mile repeat. Start each season by doing 4 or 5 one-mile repeats. Decrease to three repeats as the pace gets closer to race pace. End the season with a mile time trial.

Oregon drills: Using the perimeter of the football field, stride the length at an easy pace (let’s say 10,000 meter pace to half marathon pace). Then cross at the goal post, jogging to the other side. Run the length at a medium stride (5k pace or cross country pace). The athlete will again cross at the goal post and then run the length at mile race pace. The athlete will repeat (easy, medium, hard) for 30-40 minutes in the early season and down to 15-20 minutes during the late season. This drill is a good one two days before a hard invite or a championship meet. Athletes may run these barefoot (massages the feet and improves ankle strength) or in racing flats (good time to break in new racing shoes). Likewise, this workout works well when the athletes are tired.

1k / 200 meter repeats: The one kilometer / 200 meter workout is a great workout for alternating race pace with hard anaerobic running. The athlete runs a 1k at race or goal pace followed by an immediate 200-meter jog. Then the athlete goes straight into an all out 200. Take 2-3 minutes rest after each set. 6-8 sets are usually done at the start of each season and get as low as 2-3 sets at the end of the season when the kilometer is run at race pace or faster.

1600-meter drill: Place a cone at every 100 meters on a track. Run a hard 500 followed by an immediate 400 jog, a hard 400, jog 300, a hard 300, jog 200, a hard 200, jog 100, a hard 100. This system continues nonstop throughout the workout. All the hard work adds up to 1600 meters. This workout is best done the Tuesday before a major race. Complete each set (1600 meters) three times with no rest between each. Run at 5k date pace during the early season and gradually increase the tempo until it is faster than 5k goal pace at the end of the season.

Drills/Circuit Training

The main thing one should do in drills/circuit training is to build up and develop the central nervous system by doing a series of dynamic movements. We call this neural training. Neural training is designed to enhance running specific strength and coordination workout muscles that are controlled by the central nervous system. These drills may include the following: Skipping, Skipping backwards, skipping with crossing arms, lateral skips, high knees, butt kicks, horse kicks, hamstring skips, skipping for distance, ABC’s, walking high knees and more. Other drills are useful such as tempo quick skip, speed running (in place) and hip flexor swings. Calf rises, walking lunges, side-to-side lunges, and vertical hops are also used. These drills are used on a daily basis.

“4 sets of 3”

The four sets of three drills are used to decrease the chances of runner's knee, IT band problems, ankle issues, hip flexor problems and shin splints. The athletes set cones 75 meters apart before they begin the drills. They will then do four sets of movements [1. walking, 2. skipping, 3. running, and 4. hopping]. For each mode there will be 75 meters with the toes straight, 75 with the toes facing inward, and 75 with the toes facing outward. Do all three styles with walking and then continue in the same order with skipping, running, and hopping. Athletes must make sure they are over exaggerating the movements in these drills. All the movements used in these drills work every muscle from the lower central nervous system to the athlete's feet. This drill is done every day BEFORE practice and is performed seven days a week!
Examples of High School Training

(Athletes should, in addition, have a good warm up, drills, and stretching before each workout and a warm down and stretching after). W in the schedule stands for days to do weight training.

Sample high school cross country training week:
Monday: Easy 60-70 minutes with drills and strides
Tuesday: 4-5 x 1600 at date pace or slightly slower than race pace
Wednesday: Easy 60 minutes with drills and strides
Thursday: Oregon Drills
Friday: Easy 50 minutes with drills and strides
Saturday: Race or Time Trial
Sunday: Long Run – up to 3 hours. Finish up the long run with 12 x 110 meter grass strides.

Sample high school cross country conference training week:
Monday: Easy 50-60 minutes with drills and strides
Tuesday: 5 x 1k/200. 1k at date or race pace with a 200 meter jog after followed by a 200 all out. Rest 2 minutes and repeat.
Wednesday: Easy 50 minutes with drills and strides
Thursday: Oregon Drills (30 minutes total) + 16 x 110 meters runs at mile race pace
Friday: Easy 40 minutes with drills and strides
Saturday: Race
Sunday: Long Run – up to 2 hours. Finish up the long run with 12 x 110 meter grass strides.

Sample high school cross country state - post season training week:
Monday: Easy 40 minutes with drills and strides
Tuesday: Time Trial 1600 meters followed by team relays. Athletes break up into teams of two and run 300-meter trade off relays. Each athlete doing 5 to 8 each OR 3 sets of the 1600 meter drill.
Wednesday: Easy 40 minutes with drills and strides
Thursday: Oregon Drills – 15 minutes
Friday: Course Run with drills and 8 x 110 strides
Saturday: Championship Race
Long Jump
Long Jump

Approach to Take Off

Long Jump Approach Types

Blind 5-step approach-
Do this off of runway. Coach uses chalk to mark 5th step. (Only count contacts of takeoff foot. Step 1, step 2, step 3...etc.) Consistent first 2 steps. Good rhythm. Athlete cannot change approach to adjust for board.

Move 5-step approach to runway-
Measure distance of most consistent chalk mark to the start point. Measure this distance on long jump runway. The 5-step approach is used for most practice jumps. Have athlete master the rhythm of 5-step approach.

Blind 7-8 step approach-
Same rhythm and process as 5-step approach, only add more steps (2-3 lefts or 2-3 rights) to create more speed at takeoff.

Move 7-8 step approach to runway-
Only allow athlete to use maximum controllable speed! Hips tall at takeoff, and good rhythm are essential.

The Penultimate Step and Long Jump Takeoff

Penultimate Step-
The second to last step of approach. A slight lowering of the hips to catch C.O.G (Center of Gravity) on the rise at takeoff.

Push-Pull-Plant-
Push C.O.G. onto the second to last step, pull your hips through, and plant your takeoff foot quickly.

The penultimate step is often slightly longer than any other step.

This takes place to lower the C.O.G.

Takeoff step is slightly shorter than the others to “catch hips on the rise”.
Long Jump Drills (pop ups and penultimate drills)

Continuous pop-ups
Most specific plyometric drill for long jumping.

Easy jog into the penultimate setup
Focus on dropping.

Penultimate set up off of ramp or box
Forces athlete to put takeoff foot down quickly.

Penultimate set-up into split landing
Forces athlete to hold drive knee.

Penultimate setup off of ramp into a full landing
Good for full jump simulation with low impact on the body.

Short approach pop-ups
Focus is on holding drive knee off of board.

Full approach pop-ups
Allows coach to see if athlete can handle speed of the full approach through the setup.

Long Jump Tips

• The approach is 90% of the long jump
• Use only maximum controllable speed in the approach
• Execute full approach rhythm runs and full approach pop-ups
• Use short approach jumps in training (5-7 steps)
10

High Jump
High Jump

Running

• Do modified versions of sprint workouts (short distances)
• Use sprint drills with high jump technique
• Increase intensity of workouts over time
• Develop good sprint mechanics and technique

Approach

• Blind 10 step approach (on the track)
  • Have athlete run a straight line 10 step approach with maximum controllable speed
  • Mark the 10th step and the 5th step with chalk and take average of numerous attempts
  • Mark each step with chalk or tape
  • Focus on rhythm: 1,2,3, 1,2,3, 1,2,3, jump. Or 1.2.3.4.5.1.2.3.4.5

• Initiate the curve on 5th step
• Have athlete run a curve that feels natural
• Move approach to the high jump apron

Technical Points For The Approach

• Take off point
  • Men- 1’ inside of standard approximately 3’ to 5’ away from bar
  • Women- 1’ inside of standard approximately 2’-4’ away from bar

• Width from standard
  • Depends on speed of approach and strength of jumper
  • Men- 9’ to 12’
  • Women- 8’ to 11’
  • More narrow approaches create greater centripetal force and faster rotation about the bar
    • Make athlete prove “how narrow they can be”

• Examples of Approaches-
  • 7’3” male high jumper: 10’ and 70’
  • Elite male jumpers (7’6” and higher) are not wider than 14’
  • 5’9” female high jumper: 9’3” and 59’3”

The Curve

• Initiate curve on 5th step
  • Left footed jumpers turn right toe slightly in on 5th step
  • 6th step should be a slight cross-over to mid line of body

• Feel pressure and run around the curve
• Running the curve should lower center of mass
• Body lean is at approximately 22 degrees
• Push through the turn
• Positive foot strike and displacement

• Good sprint mechanics and body position are critical
Approach Drills
- Straight Line Rhythm approaches
  - Run for rhythm in a straight line
  - 123...123...123 Jump
- Approaches with bar lying on ground
- Circle Drills-both ways focus on displacement
  - Foot strike and body lean - feel the pressure
- Figure 8 Drills
  - Focus on transition into curve with crossover step
- “U” drills
  - Run to take off point and make a “U” to run back out other side
- Circle Drills with takeoff
  - Focus on active, “positive” take off

Over The Bar
- Finish drive knee all the way through takeoff and leave it
- Rotate right knee out instead of straightening leg
- Left leg will match right leg and line up with pelvic girdle
  - Legs apart and knees bent
- Accelerate head and shoulders to the pit quickly on the back side of the bar
- Press the hips - “Pinch a quarter”
- Once hips clear bring chin back to chest
  - This will raise calves over the bar

Over The Bar Drills
- Standing back-overs
  - From ground or box.
- 4 or 6 step jumps from a ramp
  - Focus - rotate right knee out
  - Drive head and shoulders toward backside of the pit
High Jump Technique

Foot plant before take off
• Lean in and slightly back
• Hips and shoulders lined up
• Good foot placement

Take off
• Good free leg swing
• 10% past vertical
• Right shoulder up

In Air
• Right footed jumper - left knee is up – toe up

Over The Bar
• Knees together
• Legs in line with pelvic girdle
• Hips are pressed up
• Head and shoulders move toward the pit

Clearance
• Accelerate shoulders towards pit on back side of bar

Coaching Tips

• Rhythm….Rhythm.....Rhythm on approach
• Develop last 2 steps and drive
• Drive opposite Knee through the roof
• Stay away from bar..... Attack with the side of the body

*Practice jumping on the basketball court with good high jump fundamentals
Plyometric Training
Plyometric Training

Many track and field athletes use plyometric training; it is commonly associated with jumping activities for all athletes.

The Purpose

To improve speed, power, rhythm, event specific strength and endurance: depending on the exercises, recovery period and repetitions.

Science

Plyometrics work because the exercises improve the rate of contraction by overloading the neuromuscular system. This is achieved by pre-stretching or shortening of the muscle fibers followed by a rapid dynamic post-stretch contraction.

Program Design

The plyometric progression for track and field athletes should be similar to the training design progression in specific event areas.

Exercise Guidelines

- General to Specific
- Simple to Complex
- Volume to Intensity Progression

Safety

Always use logical progressions and equipment that will not injure an athlete if the exercise is not executed properly.

For example, take the top off the hurdle and use an old hurdle board over the top, that way if the athlete hits the top of the hurdle, the board falls off and the track and field athlete can continue to complete the work out.

Sample Track and Field Plyometric Training

Sprint Start

A series of jumps before a short sprint can develop the explosive drive needed to start the race.

3 double leg jumps followed by a 10-meter sprint.

This exercises helps convert the explosive starting motion into horizontal velocity needed for short sprinters.

Distance Runners

Distance runners love to run, however more balance in training can lead to healthy athletes.

Doing a series of low intensity double leg jumps with the feet together moving down the track from one lane line to the other (ski jumps) for 4x 30 meters as part of a dynamic warm up can improve explosive power in the runner’s finishing kick.

Throws

Throwers use plyometrics to improve power to throw far.

One specific exercise for shot-putters is to drop off a 24” box with a light medicine ball and landing in the power position then jumping up and throwing quickly.

Jumps

All jumpers use plyometric training to increase jumping ability.

Triple jumpers use a series single bounding drills to develop specific strength and endurance.

Overall, plyometric training can help track and field athletes be more explosive, stay healthier and build the necessary event specific qualities to be successful.
Glide Shot Put
Glide Shot Put

Various styles of the glide
The glide style of shot putting has many outstanding technical throwers since the days of Parry O’Brien started facing the opposite way of the put. Two technical styles have survived over the last several decades.

The first style, known as the long-short technique is best modeled by the great glider from the 1970s, Al Feuerbach. The long phase is the glide, occupying half of the 7-foot circle, the power position being the short phase, taking up the other half of the circle.

Most European throwers, especially those of the old Eastern Bloc countries, employ the other style, the short-long technique. This style has a wider throwing stance for the release of the shot; usually 55-60% of the ring is used in the power position. For example, Ulf Timmerman’s power position is 30 cm or one foot behind the center of the circle.

The chart below compares the two styles during key aspects of the throw:

<table>
<thead>
<tr>
<th>Technical point</th>
<th>Long-short</th>
<th>Short-long</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left arm placement during then glide</td>
<td>Must be pointed in the opposite direction of the throw</td>
<td>Left can be allowed to open, as long as the shot stays back</td>
</tr>
<tr>
<td>Path of the shot</td>
<td>Varies from rotational to straight line</td>
<td>Straight as possible</td>
</tr>
<tr>
<td>Right leg positioning</td>
<td>Right leg must be “sucked” under the body at the power position</td>
<td>Right leg position variable as long as the shot is behind it at right leg touchdown, usually wider than the shoulders</td>
</tr>
<tr>
<td>Right foot positioning</td>
<td>Right foot must be turned 90 degrees at the power position</td>
<td>Right foot positioning is variable, between 100-140 degrees at the power position</td>
</tr>
<tr>
<td>Right foot and leg action in the power position</td>
<td>Turn then lift</td>
<td>Lift then turn</td>
</tr>
<tr>
<td>Rhythm in the power position</td>
<td>Simultaneous landing of the feet in the power position</td>
<td>Right then left foot touchdown in the power position</td>
</tr>
</tbody>
</table>
Of the top-level gliders in the world, most of the athletes are using the short-long style of throwing, although many coaches believe in the long-short method. Regardless of the style used, the coach and athlete must find what can work best for that individual.

**Coaching Points for the Glide**

**Getting started**
The shot is raised over the head; the wrist is bent facing upward, the ball rests at the base of the fingers. The shot is then placed on the neck, under the jaw with the thumb touching the collarbone.

The ideal path of the shot is straight as possible from starting position to the release, with a gradual increase in the height of the ball from the start of the glide.

**Across the ring**
The start varies from thrower to thrower, but some basics remain constant. The purpose of the start is to enable the thrower to get in to a good power position with more speed on the ball than from a standing put. A good technical thrower with the glide can gain 10-20% from the stand throw.

The thrower faces the rear of the ring in an upright position with the feet together, from this position several different starts can be used:

The upper body is bent slightly over the right leg, knees are together and the left foot is slightly behind the right foot at the starting position. The lower body falls back or unseats from the waist, then the left leg is stretched and kept low as it extends across the ring. The right heel leaves the rear of the ring after the left leg is extended. The left arm is down and relaxed, the upper body remains passive, the thrower’s eyes and head remain back.

As the thrower gains experience, the thrower can lower the upper body into a crouched position.

**Advanced start: active left leg start**
The upper body is bent slightly over the right leg, the left foot starts in the middle of the ring, and the legs are brought together at the knees as the upper body is dropped down slightly. Then the lower body unseats and left leg is either stretched or aggressively driven to the toe board, depending on the thrower’s skill level. The right heel leaves the rear of the ring after the left leg is extended.

**World class variations**
Most top-level throwers use the advanced start, some world-class throwers add to this technique.

Ulf Timmermann and many other European gliders, rise up on the right toe in the back of the circle as the knees are brought together. A longer path of acceleration on the ball and added momentum out of the back of the circle are the main factors for this variation.

**Across the ring**
Most of the force to get across the ring is generated by unseating and driving the left leg to the toe board. The right leg is picked up and place near the center of the ring. The upper body remains passive and back, for most throwers the left arm will remain back and over the right leg.

Once the athlete starts the glide across the ring, the thrower must keep the ball and body moving toward the throw. Shot-putters need to increase the speed of the throw during this movement and set up a proper throwing position.
**Power position**
The shot-putter lands on the ball of the right leg, the left foot touches down after the right foot, the feet will have a right heel to left toe relationship, so the hips can open during the putting phase. The throwing stance varies in width depending on the technique employed by the athlete. The long-short technique has a narrow base, with the left foot landing on or past the mid-line of the circle at a 90-degree angle from the throw. The short-long style uses a wider throwing stance, generally behind the middle of the circle with the right foot turned slightly from the starting position in the back of the ring, approximately 100-140 degrees from the throwing area.

The shot remains over the right leg, the upper body is still passive, and however, some athletes actively open the left arm as the athlete reaches the power position, but the shot is always kept back over the right foot with good technical throwers. The shot put should down, the right elbow below the right hip when looking at a side view. The lower the ball, the greater the pull and the longer the path to apply force on the shot.

The longer base has an advantage because of the wider base of the power position, there is a longer increase in the acceleration path of the shot will travel when the athlete applies muscular force. However, the longer path of acceleration must be over a short time because the velocity of release is such critical factor for the shot put-ter.

**The release**
In the long-short technique, the athlete pushes then turns with the right side of the body. With the short-long the thrower focuses on lifting the ball first then turning into the throw

The left leg braces with a blocking action, as the left arm opens to the middle of the throwing sector. Then, the right side begins the throwing action with a high arm strike, the elbow up near the ear, the left arm pulls in toward the chest. The left hip remains behind the knee to increase the blocking action during the put; the legs extend and remain on the ground as long as possible. Finally, during the final putting action, the legs lift off the ground and the put is finished at a throwing angle between 37-41 degrees.

The right leg lands against the toe board, with a flat foot parallel throwing area, and then the center of gravity is lowered for added stability and balance after the release of the shot.
Teaching Progression For Stand Throws

Two handed chest pass:
The athlete steps forward with the left leg and throws a light medicine ball. The thrower has the elbows out and the thumbs down for the chest pass throw.

Next, the thrower can twist to the right and throw with more force from the right side.

Crunch drills:
1. The thrower faces the front of the ring with feet forward, shoulder width apart and the knee slightly bent. The thrower places the shot into the neck and holds the left arm straight and toward the center of the throwing sector. The athlete then drops the right side of the upper body down so the right elbow below the hip. The athlete drives the right side up to complete the throwing drill; the throws are completed without a reverse.

2. The next progression the crunch drill the athlete places the left hand to the forehead.

3. The final progression in the crunch the shot-putter places the left arm down over the right knee to create some separation from the upper and lower body.

All the crunch drills can also be done with a medicine ball.

Stand throw
The shot-putter sets up the upper body similar to the crunch drill with the left arm down. The left leg is lifted up 4-8 inches off the ground to simulate the right to left action in the throw. The delivery phase is the same as the full throw.

The width of the base will depend on the type of technique used.

Stand throw-glide
The thrower gets into the power position, for most gliders the right foot will be placed in the back half of the circle. Once the left leg touches the ground, the thrower focuses on lifting up with the upper body.
Teaching Progression For The Glide

Unseat into wall
The athlete gets into the starting position about one foot from a wall; the thrower lets the body fall back into the wall. This drill teaches the first movement in the glide, the unseating or falling back of the hips.

Unseat with left leg stretch
The shot-putter unseats the body, and then stretches the left leg slowly across the ring. The right stays in the back of the circle, the right heel will remain on the ground. The upper body stays down and over the right leg.

Unseat with left leg stretch and right leg step
The thrower executes the previous drill then pauses and picks up the right leg and places near the center of the circle.

Step across throw
The thrower gets into the starting position and instead of gliding steps in the power position. The thrower will unseat, then step back with the left leg to the center of the circle. The right leg is brought up next to the left leg then the left leg moves toward the toe board to the power position.

This drill can be executed slowly at first with a stand throw, then the thrower can progress to a step back with the athlete constantly moving forward and execute a put.

Glide pause stand throw
The shot-putter glides and pauses, then completes a stand throw. This a great drill to combine the glide action and the stand throw. As the throwers technique improves this drill is not used very often because the timing is different from the full throw.

Straight leg glide
The start is the same as a glide expect the left foot is placed the middle of the circle. The left leg is straight and as the athlete unseats the left leg is stretch to the front of the ring.

Full glide-no reverse
Throwing from a full glide without a reverse is an excellent drill for developing a powerful block and helps the athlete to apply force over long time to the ball.
Spin Shot Put
Spin Shot Put

Spin Technique

12 o’clock is the back of the circle.

The greatest advantage of the spin technique is the superior development of momentum and the application of force over a great distance.

Many smaller throwers have been very successful using the rotational technique, however many of the larger throwers use the spin as well. Coaches of novice throwers today often work on both the glide and the spin to see which is best suited for each individual.

The Start

In each of the throwing events the start is very individualistic. The spin technique in the shot put is not any different. However, there are many common aspects to the start that are part of a quality technical throw.

For beginning throwers, a wind up can cause problems with balance and consistency; therefore, a static start is recommended for novice throwers in the spin technique.

Static start

The athlete should go into a slight squat straddling in the center of the ring at the rear of the circle, with the flat feet about shoulder width apart. The thrower’s body weight is evenly distributed or has slightly more weight on the left side.

The shot is raised over the head; the wrist is bent facing upward, the ball rest at the base of the fingers. The shot is then placed on the neck, most spinners hold the shot closer to the ear then the chin, and the ball is further back on the neck when compared to elite gliders. The left arm is straightened and held out near the mid-line of the body. The torso inclination can vary, however most beginners have only a little forward lean. As the thrower develops, a deeper squat at the start and more upper body slant may be adopted.

The Wind Up

The wind up should be with the upper body turning to the right, with little weight shift of the lower body. The athlete executes the wind up with the feet flat or slightly up on the toes.

During the early development of the spin, a big wind up was used by many of the top throwers, similar to the discus wind up in the 1970s when the spin shot put technique was starting to evolve. It is more common today to see a minimal wind up with little to no weight shift in the back of the circle.

Out of the back

At the back of the circle the thrower’s weight is shifted to left leg, then the right leg is picked up. As the right leg is picked, the thrower sinks or drops onto the left leg.

Mike Turk in his article “Building a Technical Model for the Shot Put“ states “As soon as the thrower is facing 3 o’clock, I want him to sink on the left leg and drive the right leg ahead by lifting the right hip and knee over the left side to the middle“.
The right side sweeps across the body, the knee and foot lead the lower body. For the advanced thrower, a long sweeping action of the right leg will create a greater distance between left toe and right toe during the sweep in the back of the circle, resulting in greater rotary momentum.

The left arm should stay inside the knee and the shoulders are all to keep the body on balance. The left leg should stay low and flexed, ready to push off toward the front of the circle.

**Into The Middle**
The right foot leads the sprint to the middle and an active push from the left leg helps to speed up the lower body. As the right foot makes contact, it should land just past the centerline and land between 7 o’clock and 9 o’clock and the left leg will be airborne near the 3 o’clock position. In addition, the knees are brought close together in the middle of the circle to help speed up the throw and help create more torque in the power position. Some advanced throwers wrap the left arm across the body as the right feet lands, creating additional separation.

Once the right foot has made contact just past the middle of the circle, the right foot must continue to rotate and the shot should remain behind the right hip until the left foot touches in the front of the ring, with the same heel to toe relationship as in the glide technique. Once the right foot touches down the main acceleration phase of the throw begins.

**Delivery**
After the left foot has made contact the shot-putter is ready to finish the throw. The thrower should keep the body weight back over the right side as the right foot continues to turn. The momentum created by driving across the ring is now converted into vertical lift.

The thrower’s body lifts upward off the ground, the left side blocks as it is elevated off the ground and the put is finished at a throwing angle between 37-42 degrees.

The right leg lands against the toe board, with a flat foot parallel throwing area, then the center of gravity is lowered for added stability and balance after the release of the shot.
Teaching Progression For The Spin

Stand throw-Spin
In the stand throw for the spin shot, the thrower gets into the power position with a narrow base; usually the feet are within the front half of the circle. The shot-putter focuses on turning then lifting with the feet, which is the opposite of the glide technique.

½ turn throws
The thrower's right foot is placed six inches past middle of the circle, the right foot is placed at 9 o'clock and the upper body is facing the center of the sector, the left arm is up and facing the center of the throwing sector. The thrower starts the throw will the right foot turning, as the upper body stays back as long as possible. The thrower turns the right side then lifts the body with both legs driving upward.

Another variation with half turn is multiple ½ turns with a throw.

As with the standing throws, the throw is often completed without a reverse.

Slow full throws
The athlete executes the full technique but a slower pace focusing on body positions, usually with lighter implements.
Non-throwing drills for the spin shot put

Step-out
Without a wind the thrower steps out with the right leg, tapping it on the ground at the 3 o’clock position. The left side should point at 3 o’clock with the shoulders level, the left leg will support most of the body weight (90%+).

The wind from the full throw can added after the drill is mastered.

Turn to the middle
The athlete executes the first half of the throw, but the left leg remains in the back of the circle. The shoulders and left arm face the center of the sector (12 o’clock) and the right foot lands at 9 o’clock near the middle of the circle.

Step out, turn to the power position
The thrower performs a step out, and then works on sprinting from the 3 o’clock position, landing in the power position. The drill should simulate the actual body position in the full throw, keeping very little weight on the right leg on the step out.

Turn to the power position
The athlete executes the initial throwing motion, landing in the power position. The emphasis is on balance and landing in a good throwing position with most of the body weight over the right leg.

Spin versus Glide

Brief review
The spin technique was first practiced in Europe in the 1950s but did not receive much attention until the 1970s. In 1975, Brian Oldfield threw a world best 75’0” and Aleksandr Baryshnikov of the Soviet Union won the bronze medal in the Montreal Olympic Games in 1976.

The spin technique started as an alternative for smaller athletes or athletes with injuries preventing the thrower to execute the glide properly. However in the new millennium, many different sized spinners use the technique. Adam Nelson is more than traditionally sized spinner at 6’0” (1.83cm), 260 pounds (120 kg) whereas Christian Cantwell measures in at 6’6” (1.98m), 330 pounds (150 kg), both have put over 73’ (22.50m). The spin has developed into a technique for athletes of all sizes but is dominated by North American trained athletes. Many of the top spinners outside of the U.S.A. have been apart of the N.C.A.A. system. In the Olympic Games, gliders have dominated, but Olympic Champions were produced with the spin in 1996 and 2000. There has never been an Olympic medalist for the women using the spin technique.

The positives and negatives of each technique
The glide seems better suited for tall, largely built athletes. The glide has more consistent results and is easier to execute. On the negative side, the glide has a limited force application and speed development across the ring. For example, a good technical glider thrower may add 10% from the standing throw to the glide whereas a good technical spinner by add over 20% from a stand to the full throw.

Athletes of all sizes and strength levels can use the spin. The greater and longer application of force and momentum produces further throws in the spin. The ball is constantly moving in the spin technique, setting up a more explosive finish. However, the rhythm of spin technique is a difficult to master especially for athletes with limited practice schedules. Also, the path of the shot is not as linear as the glide causing inconsistent release patterns.
Discus Throw
Discus Throw

For positioning, 12 o’clock is used as the front of the circle

Preparation of The Throw

The start and the wind up are critical to set up the throw. The wind up is very individualistic, but for the beginner, the simpler the better. One preliminary swing is enough to establish a rhythm to start the throw and should be simple and consistent. Most the speed developed in a throw is in the other phases not the wind up. Higher turning speed in the back of the circle means a higher risk of the delivery phase not being executed properly.

The discus throw has two common starting positions, left foot on the centerline or with the feet straddling the centerline.

After establishing the starting point, the thrower gets into an athletic position and drops down into \( \frac{1}{2} \) half-squat with the legs shoulder width apart or slightly wider. The discus thrower’s body weight is evenly disturbed or the thrower can have more weight on the left leg.

The upper body will lean forward slightly with the chest over the knees, the right arm should be at the side of the athlete holding the discus. To begin the wind, the right arm moves toward the left side, between the left hip and shoulder.

As the discus is brought to the left, the left arm aids in the wind by catching the discus as it moves to the left side.

The left arm should be long and straight at shoulder height inside the left knee as the athlete brings the discus to the right side during the wind.

Novice throwers should maintain even weight distribution or slightly more weight on the left side with little weight transfer from left to right during the wind. Only the upper body should rotate during the wind for beginning throwers. Some advanced throwers use a longer wind up to the right to gain momentum and additional torque between the upper and lower body at the start of the throw.

Getting Out of The Back

After the wind up, the throw is initiated with a shift in the weight to the left side.

The right foot is picked up and the right foot sweeps past the left side of the body and leads the throw. The right leg should be long and out away from the thrower. Individual differences dictate the spacing between the thighs out of the back of the circle, a quicker athlete may want to keep the feet tighter and the taller athlete may go with a wider right leg.

Creating The Power Position

The right toe should clear past the left foot before the athlete starts the sprint to the middle. The left leg should stay low and flexed, ready to push off toward the front of the circle. The left arm will remain inside the knee and with the shoulders level to help keep the body on balance.
The discus should remain behind the hip when the right foot touches down near the middle of the circle, the discus will be 360 degrees from the center of the throwing sector if proper torque is maintained during the drive or sprint to the middle of the circle.

When the right foot touches down near the middle of the circle, the left leg is kept close to the right leg. The right leg lands between 1 and 3 o’clock, the left foot is airborne at 9 o’clock. Keeping the knees together in the middle helps to create even more torque in the power position.

The sooner the athlete can get into the power position the faster force can be applied to the discus to create more release velocity. The discus thrower’s main biomechanical source of speed is rotary momentum, which is created from the back of the circle to the power position during the throw.

The main focus of this phase is to set up a good throwing position and increase the speed of the throw.

**Finishing The Throw**

After the right leg makes contact near the middle of the circle it must continue to turn, the left leg snaps down to the front of the circle, the discus should be 270 degrees from the throw. After the left leg has contacted the ground the throwing action can begin, this position is called the power position and is same positioning used in the standing throw.

The right leg turns with most of the body weight over it, the thrower works to stay over a turning right foot as long as possible.

The shoulders are back and over the right leg as it turns. Since the hips lead the throw, the upper body is waiting to strike. As the legs turn the left arm opens up and stretches high across the chest.

When the thrower is ready to finish the throw, the chest and head drive upward with the legs. The legs will lock out and drive upward just before the release of the discus. The chest is driven up to meet the left arm, which is now pulling in.

The right side of the body rotates to complete the throw as the left side of the body braces and acts like the hinge on a door. The bracing action, called the block, is critical to accelerate the final phase of the throw.

The discus thrower feels a long and powerful pull on the discus as the legs turn and lift during the execution of the throw. The two keys to a great finish in the discus throw are a strong block from the left side and a right side the never stops turning until the discus is released. The discus is released just below shoulder height.

There are two types of releases in the discus throw, the non-reverse and the reverse at release. In the non-reverse, the thrower’s feet stay fixed on the ground during the release of the throw. With a reverse, the thrower lifts off the ground during the release of the throw and right foot is brought forward to the front of the ring after the discus is released. The reverse of the feet is also called the recovery since the discus thrower recovers their balance after the release of the discus.

There is disagreement if throwing with fixed feet is better than throwing with a reverse. The longer path of acceleration with fixed feet versus increase in the height of release with the reverse is the biomechanical debate. The coach must find the technique that has consistent high-level results for the discus thrower.
Influences on discus distance
1. Velocity of the discus at release
2. Angle of release
3. Attitude angle or angle of tilt at the release
4. Wind direction and velocity

Throwing angles, wind and discus types
The discus is an aerodynamic event; wind conditions can affect the flight of the throw. The vertical lift and horizontal drag as well as the type discus thrown are factors in the distance thrown in the discus. To maximize aerodynamic forces, the discus should be released with some upward tilt to the front of the implement. The ideal angle of release for the discus throw is between 32-37 degrees. Facing the throwing sector, a head wind is ideal, also some cross wind form right to left is helpful for quality discus throwers. Although wind conditions and discus throwing is an interesting topic, most throwers should be more concerned with the execution of the technique.

Ideally, beginners should throw a discus with lower rim weight (70%) like the OTE Low Moment discus because the thrower has a less clockwise spin on the implement. More advance throwers use a discus with high rim weight, such as a Pacer Gold (90%) because of the higher rim weight, the discus turns faster and goes further if the thrower can apply the initial spin on the implement.

Teaching Progression For The Discus

Bowling
The discus is released with a clockwise rotation off the index finger. The thrower rolls the discus off the hand near the ground and focuses on the clockwise release of the implement.

Tosses
The thrower tosses the discus in the air, then adds some arm swing and the discus is released from the side of the body like an actual discus throw.

The drills are designed to teach proper release technique and develop confidence that the discus will not fall off the hand if the implement is in motion.

Standing throw
The thrower gets in the power position with the feet wider than shoulder width, the discus starts on the left side, then the discus thrower winds the discus back to 270 degrees and turns the right leg into the left side.

Standing are often completes without a reverse to emphasize the right side turning and a strong block with the left side.

½ turn throws
The thrower sets up in the middle of the circle, the right foot is placed at 9 o’clock and the upper body is facing the center of the sector, the discus is at the side of the body. The focus of the throw is an active turning the right foot, as the upper body stays back.

Multiple ½ turn throws
The thrower completes a series of 1/2 turns then on the final ½ turn, the discus is thrown.
The discus thrower can also lean back and lift the right foot up and place it down in the middle of the ring, this adds some rhythm to the half turn throw and closely simulates the timing of the full throw.

As with the standing throws, the throw is often completed without a reverse.

**Slow full throws, no reverse**
The athlete executes the full technique but at a slower pace focusing on body positions. During the release phase, the discus thrower’s feet remain on the ground.

**Full throws, no reverse**
The throw is performed without the reverse, concentrating on turning the right side in the middle and the blocking action of the left side.

As with the slow full throws, other objects can be thrown to learn the technique without focusing on distance.

**Non-throwing drills for the discus**

**Winding**
The thrower practices the winding motion. The athlete needs to learn how to properly set up the start of the throw. This drill is works on the whole winding motion, not just winding repeatedly; it prepares the athlete for the next phase of the throw.

**Wind and step-out**
The athlete completes a wind and steps out with the right leg, tapping it on the ground at the 3 o’clock position. The left side should point at 3 o’clock with the shoulders level, the left leg will support most of the body weight (90%+).

**Wind, step-out, step to the middle**
The thrower completes the previous drill, then step with the right foot to the middle of the circle.

**Wind, step-out, step to the middle, turn to the power position**
The discus thrower adds to the previous drill by turning the right foot is in the center of the circle and the athlete will complete the drill by finishing in the power position.

**Wind, step out and turn to the power position**
The thrower performs a step out, and then works on sprinting from the 3 o’clock position, landing in the power position. The drill should simulate the actual body position in the full throw, keeping very little weight on the right leg on the step out.

**Turn to the power position**
The athlete executes the initial throwing motion, landing in the power position. The emphasis is on balance and landing in a good throwing position with most of the body weight over the right leg.
Drills with a throw

During each phase of the drill there is a long pause, the coach checks the positioning of the thrower, then the next phase of the drill/throw is completed.

Wind, step-out, step to the middle, turn to the power position, standing throw

Wind, step out and turn to the power position, standing throw

Turn to the power position, standing throw

Wind, step-out, step to the middle, \( \frac{1}{2} \) turn throw

Wind and step to the middle, \( \frac{1}{2} \) turn throw
Performance Training
Track and Field Performance Training

Goals of Training – training will be aimed at reducing each athlete’s potential for injury and improving the physical qualities that will allow them to perform their specific skills at the highest level.

Transfer of Training Affect – this is simply the relationship between the improvements made in training performance and how it affects performance of a specific skill. For example if improved performance in training does not positively reflect in the ability of specific sport performance then the transfer from training to the field is low. Choosing the proper training modalities (exercises) and dose allows a greater transfer of training which yields greater event application.

Movement Based Training – training will focus on movements that will translate into athletic performance and quality of movement should never be compromised for greater intensity (i.e. heavier weights). When athletes train movements the muscles required for improved performance will be trained requiring inter-muscular coordination between muscle groups requiring actions that will be specific to the sport, if training focuses in individual muscles then this coordination and “communication” between various muscle groups is lost and transfer of training affect to each event is much more difficult.

Exercise Selection – as stated above training should focus on movements that will allow the greatest improvements in performance. These movements should be specific to athletics but specificity does not imply simulation. Exercises that meet the following three criteria should be the foundation of training.

• *Ground Based* – force application into the ground is the major difference between the various levels of performance among athletes. This applies to total amount of force that can be generated but also how force can be generated per unit of time (power).

• *Multi-Joint* – given that athletics skills require a kinetic chain multi joint action to run, jump and throw it only makes sense to choose and train movements that require multi joint action that will allow the inter-muscular coordination of the segments needed specific to the sport of track and field.

• *Three Dimensional* – training the body to produce and resist forces in a three dimensional manner will have a greater carryover to each event and the specific skills of the sport.

The above three principles for selecting sport specific exercises are found in every on field skill so it would only be logical to perform exercises that challenged these three principles in training.
Strength Pyramid

- Skill
- Speed
- Power
- Strength (Max / Endurance)
- Work Capacity / ESD
- Movement / Recovery
- Evaluation / Planning
**Training System** – system in which all components will be involved at some level but will vary based on each individual and the progress throughout the training year. This system will allow proper organization of training variables and modalities in effort to help each athlete reach their highest physical performance potential. There are 7 components to the entire system.

1. **Pre-habilitation** – addressing each individual’s weak link to prevent the possibility of injury that may occur through compensations due to poor or weak movement patterns. The aim is to be proactive with injury prevention rather than reactive, so we won’t wait until it’s broke to fix the problem
   a. Previous Injury History – open lines of communication to understand each athlete’s previous injuries or restrictions and improve them through progressive and consistent training.
   b. Movement Screen – evaluate each athlete’s general movement qualities as a starting point for training. In sports we always look at performance based testing results and it is just as important to evaluate the quality in how each athlete functions through the biomechanics of their skeletal and neuromuscular systems. The following areas are evaluated through the movement screen.
      i. Squatting
      ii. Stepping
      iii. Lunging
      iv. Reaching
      v. Leg Raising
      vi. Push Up
      vii. Rotary Stability

2. **Dynamic Movement Warm-Up** – athletes should warm up as they wish to perform, therefore incorporating proper movement patterns that progressively warm up the tissues and take the joints through an active range of motion will be best suited for performance and will incorporate the same standards that we use for exercise selection in all aspects of training as they will be most specific to track and field (ground based, multi-joint and three dimensional). All warm-ups should progress from general to specific, shorter range of motion to greater range of motion and low intensity to high intensity.

3. **Speed Preparation (Plyometrics)** – following a low to high intensity warm up and general to specific approach the next phase would incorporate beginning to increase the neuromuscular systems ability to create forceful, rapid movements by increasing the rate of force development. In athletics even though maximum strength plays a role in performance, the rate at which force can be applied is even more important because baseball skills are time dependent so these power improvements are critical for performance.

4. **Speed Application (Linear and Specific)** – speed application can be broken down into two components that will aid each other in improving performance.
   a. Technical – improving the efficiency and technique of the movement to produce optimal positions for acceleration, deceleration and change of direction
   b. Tactical – using the improved technical ability in an actual sports similar movement that can transfer the technical ability
5. **Strength-Power Development** – strength is the ability of a muscle or group of muscle to produce force and power is time dependent strength application. Training for strength and power must focus on the entire continuum of strength application from high force/low velocity to high velocity/low force. Using exercises that are ground-based, multi-joint and three dimensional will have the greatest carryover to athletic performance. Exercise selection will be based on training movements that fall into five categories to train the entire body. Movement will be based on an athlete’s individual progression and training skill to provide the most effective and efficient workout.

   a. **Lower Body Push** – Movements that train the body to load and move the center of gravity toward the ground (deceleration) and then explode away from the ground (acceleration) by triple joint (hip, knee and ankle) flexion and extension that will improve the ability to produce force against the ground.

   b. **Lower Body Pull** – movements that load the hips outside the base of support (deceleration) and pull the hip back into support (acceleration). These movements are focused on hamstrings, gluteus and torso.

   c. **Upper Body Push** – movements focused away from the body

   d. **Upper Body Pull** – movements focused towards the body

   e. **Torso** – training the torso to efficiently transfer forces from the lower body into the upper body to prevent strength/power losses that could result in energy leaks and inefficient force transfer.

6. **Energy System Development (ESD)** – training within proper work to rest ratios that will provide the greatest adaptations for event specific conditioning. This will allow the dominant energy system used in each event to work effectively and recover adequately throughout a competition.

7. **Recovery and Regeneration** – training is a stress and the only way that adaptation and improvement happens is through recovery. These methods must be incorporated and instilled if fatigue is to be minimized and injury potential reduced. Methods include but are not limited to post workout stretching, soft tissue work, ice, active rest, post workout supplementation, nutrition, hydration, alcohol avoidance and sleep. Many of these issues occur off the field so education is an important, control what we can control.

The wider the levels below the greater potential for a wider point at the top of the pyramid, the key is finding what level or areas are the weak point in each athlete’s profile so weaknesses don’t hold back another levels development.
16

Nutrition
Track and Field Nutrition

Track and field athletes have various nutritional needs depending on the requirement of the specific training regimen. First, general principles of proper nutrition will be reviewed, followed by tips and considerations for different event groups in track and field. Finally, sample food options that best fit the athletic lifestyle will be given.

Nutritional Guidelines For All Athletes
- Eat every two-three hours
- Eat protein and complex carbohydrates
- Stay hydrated with water
- Post work out nutrition with 30 minutes
- Never skip a meal, always keep snack items with you

Proper Sports Nutrition Benefits
- Optimize gains from training program
- Enhance recovery between workouts and events
- Achievement of ideal percentage body fat and weight
- A reduced risk of injury and illness
- Confidence in being well-prepared to face competition
- Consistency in achieving high level competition performances

Track and Field Specific Nutritional Considerations

Endurance Events
Pre-workout meal guidelines:
3 hours before practice or competition:
16-20 ounces of water, lean meats, fruits and nuts

1 hour before practice or competition:
5-10 ounces of water, low fat granola bar

During practice or competition
6 ounces of water per 20 minutes of activity
6 ounces of sports drink with electrolytes per hour
6-ounce meal replacement bar for activities over 2 hours

Within 30 minutes post practice or competition
Fruit, granola bar, breads

Up to 6 hours post-workout-competition (every 2-3 hours)
Lean meat, grilled fish, fruits, vegetables, breads and dairy
At least 8 ounces of water per hour depending on climate conditions

Special Considerations: Decreasing fiber and protein intake pre and post workout can help reduce stomach discomfort during long training sessions. Liquid meals can be used if this is persistent problem with athletes.
Sprints, Hurdles and Jumps

Pre-workout meal guidelines:
3 hours before practice or competition:
16 ounces of milk or juice, beans, lean meats, fruits and nuts

1 hour before practice or competition:
8 ounces of water, low fat granola bar, fruit

During practice or competition
8 ounces of water per 20 minutes of activity
8 ounces of sports drink with electrolytes per hour

Within 30 minutes post practice or competition
Fruit, granola bar, pretzels, bagels
Meal replacement with protein and carbohydrates

Up to 6 hours post-workout-competition (every 2 hours)
Lean meat, grilled fish, fruits, vegetables, breads and dairy
At least 8 ounces of water per hour

Special Considerations: Balance nutrition and calories: speed and power athletes need proper nutrition and caloric intake to maintain or improve body composition.

Throws

Pre-workout meal guidelines:
3 hours before practice or competition:
16 ounces of chocolate milk, beans, lean meats, fruits and nuts

1 hour before practice or competition:
8 ounces of milk or protein shake, granola bar, fruit

During practice or competition
8 ounces of water per 20 minutes of activity
8 ounces of sports drink with electrolytes per hour

Within 30 minutes post practice or competition
Fruit, granola bar, pretzels, bagels
16 ounces of meal replacement with protein and carbohydrates

Up to 6 hours post-workout-competition (every 2 hours)
Lean meat, grilled fish, fruits, vegetables, breads and dairy
At least 8 ounces of water per hour

Special Consideration: Achieve weight gain in throwers by eating more breads, fruit or nut based desserts and higher fat dairy products
10 Rules for Sports Nutrition and Recovery

1. Get 8 hours of sleep EVERY night – it is not possible to “catch up” on sleep. Great things happen when you get a solid 8 hours of sleep each night such as release of hormones that aid in recovery and rebuilding.

2. Eat breakfast upon waking – If you followed rule #1 then your body has been in a fasted state for 8 hours. To combat staying in a catabolic state get some protein and carbohydrates in your body immediately to fuel the recovery process.

3. Eat Every 2-3 hours - due to hectic schedules, practice and training this is sometime one of the hardest rules to follow, however with proper planning it can be done. Eating every 2-3 hours constantly keeps the fire fed, stops overeating and keeps blood sugar stable which leads to less fat storage.

4. Eat protein with every meal – there are numerous ways to get protein in your diet. Each athlete should consume approximately 1 gram of protein per pound of lean bodyweight.

5. Consume a post-workout shake w/in 30 minutes - a rapidly replenish the low glycogen stores in our muscles b. rapidly decrease the muscle protein breakdown that occurs with exercise c. Rapidly force further increases in muscle protein synthesis. Accomplish this by consuming .4g carbohydrates and .2g protein per pound of bodyweight after a depleting workout, which includes practice.

6. Drink at least 1 gallon of water per day – everyone has heard the old adage that if you start drinking when you feel thirst that you are already dehydrated and performance has already decreased.

7. Avoid High Fat and Processed Foods – if it comes in a colorful and shiny package, it’s probably not the best food choice. Learn how to read food labels and use common sense. Evaluate your shopping habits or lack thereof and make changes as necessary.

8. Avoid Simple Sugars and Caffeine – simple sugars can cause you energy levels to become unstable and cause cravings. Caffeine is a stimulant that dehydrates, see rule # 6.

9. Eat 5 servings of Fruits/Vegetables every day – excellent source of vitamins, minerals and fiber, enough said.

10. Post-Workout Stretch – assists in bringing the muscles back to resting length.
WHAT YOU CAN DO WITH THIS BOOK

You are given the unlimited right to print this book and distribute it electronically (via email, your website, or any other means). You can print out pages and put them in your team’s locker room or pass them around to your fellow staff members.

You may not alter this book in any way, though, and you may not charge for it.

DOWNLOAD IT and SHARE IT

This book is available from

http://digitaltrackandfield.com

ABOUT THIS BOOK

This book is free. I encourage you to email, forward and otherwise share it with the world.

© Digital Track and Field

COPYRIGHT INFO

This work is licensed under the Creative Commons Attribution-NonCommercial- No Derivs License.

IF YOU ENJOY THIS BOOK OR FEEL IT NEEDS ADJUSTMENTS, PLEASE EMAIL US

Help@digitaltrackandfield.com
Coaching Articles

Information in this book has been provided by or inspired by writings from

- Scott Cappos
- John Raffenseperger
- Joey Woody
- Joel Pearson
- Boo Schexnayder
- Travis Geopfert
- Damon Davis

Photos

- University of Iowa Athletics (Darren Miller)
- University of Arkansas
- University of Illinois
- PhotoRun
- Boo Schexnayder
- Scott Cappos
- Joey Woody
- Plus sources on the internet