

Training Long Jumpers

Success in the long jump depends a great deal on the speed of the jumper because horizontal velocity (speed) is a primary requisite for ultimate success in the event. Great long jumpers such as Carl Lewis, Mike Powell and Marion Jones are also world class sprinters. Just as important as horizontal velocity is vertical impulse and, finally, technique also affects performance.

A Philosophy for Coaching Long Jumpers

High school coaches will find the abilities and physical maturity of young athletes will vary greatly. Long jumpers may range from 14 to 24 foot performers. A coach needs to construct a training program to encompass this spectrum of ability. Training that emphasizes the fundamentals of speed, rhythm and power will benefit jumpers the most. Emphasis on technical execution should increase the performance of all jumpers as they acquire basic jumping skills.

A left-footed takeoff is assumed in all descriptions throughout this chapter on the long jump.

The long jump can be broken down into four phases: 1) the run-up, 2) the takeoff, 3) the flight in the air and 4) the landing.

THE RUN-UP

The dual objective of the run-up is to generate maximum controllable speed at the takeoff board and to be accurate. An accurate and consistent approach run is essential. Habitual fouling or taking off well behind the takeoff board is the result of poor preparation. Sound fundamentals, good sprint mechanics, rhythm and repetition will produce consistent approach runs.

These are important concepts in producing an efficient and precise run-up...

1. Most run-up accuracy errors are caused in the first three to four steps.
2. The last five to six strides in a run-up, when the jumper is in “full flight”, should be the most accurate in stride length.
3. The long jump is not a race! The object is to generate maximum speed at the board. The run-up is a controlled acceleration from the start to the takeoff.
4. The length of the run-up is determined by the point at which each jumper can reach maximum controllable velocity. Generally, the faster the runner, the longer the run-up will be.
5. When stride frequency ratios are interrupted by adjusting the stride length in the last five to six strides to “hit the board”, horizontal velocity is diminished. Just because the jumper is “on the board” does not mean it is an accurate or good run-up. It is more important to be on the coach’s mark five to six strides out from the board.
6. Every jumper has a “posting” leg or a takeoff leg and a “swing” leg or drive leg.

Right-handed athletes generally “post” with the left leg and “swing” the right leg. It is important that long jumpers use the correct leg. A good test for this is to see how a jumper kicks a football. The leg that the long jumper kicks a ball with is the swing leg.

7. Horizontal velocity off the board normally takes priority over height in the long jump.

Establishing a good run-up can be done on the track so that the takeoff board and sand pit do not psychologically affect the stride pattern.

BEATS

Long jump run-ups are measured in “beats..” A “beat” is nothing more than two steps (e.g. each left foot plant). A ten beat run-up, therefore, is twenty strides to the board. Novice jumpers should start at six beats (12 strides), intermediate jumpers eight or nine and good jumpers will need 10 beats or more. The distance of the last four strides, divided by two, allows the jumper to move his or her start marks forward or back a “beat” to shorten or lengthen the run-up (about 13 feet) and still be accurate to the board.

START MARKS

A start mark is placed along the runway where the athlete first begins the run-up. A secondary mark should be at a comfortable three or four steps into the run-up. This secondary mark monitors the place where most run-up accuracy errors occur.

4-5 OR 6 STEP MARKS

This marker is placed four to six steps out from the takeoff board and is not for the jumper—it is for the coach—the athlete should never look for this mark on the runway. In fact, many people refer to this mark as the “the coaches mark,” it is the most important mark because being “on” allows the jumper to take even strides to the board without making stride adjustments.

RHYTHM

Like music, the run-up must have a rhythmic quality in order to build up speed and be accurate. Since the final four to six strides are relatively consistent, and the coach can monitor the first three to four steps, the only problem is getting from the start marks to the coach’s mark. This can be accomplished by adopting a three step rhythm. The jumper needs to “hear” this galloping rhythm and be able to repeat it.

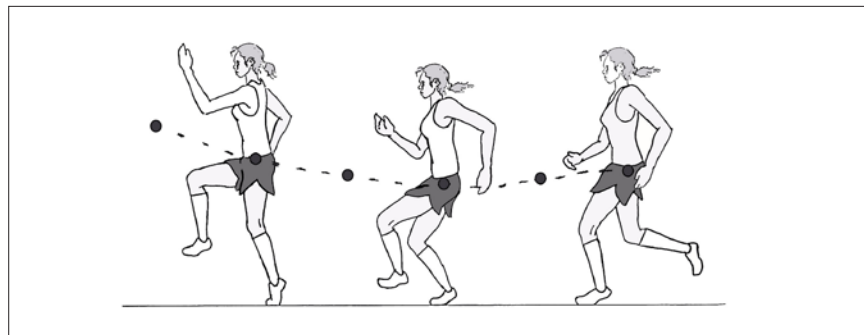
THE TAKEOFF

The long jump takeoff entails lowering the center of mass slightly on the penultimate step (next to last step) and driving the left arm and free leg upward to apply extra force to the board thus creating lift and some vertical velocity. This should have a “ba-boom” sound to it.

Long jumpers should not look at the takeoff board during the run-up or at takeoff but should keep the eyes focused on a spot behind and above the pit. The jumper should also not throw the head back on takeoff. Applying too much upward movement diminishes the horizontal velocity off the board.

In a run-up, as in sprinting, the ground contact for each step is about .07 to .08 seconds. During the takeoff, the center of mass keeps moving while the foot is in contact (.11-.12 seconds) with the takeoff board. This creates a “hinge moment” (also called checking linear motion) resulting in a forward somersaulting action.

Where the center of mass is in relationship to the foot when it breaks contact with the board makes up part of the length of the jump. The center of mass should be well forward of the foot. Some coaches believe it is not necessary to “coach” a lowering of the center of mass on the penultimate step—they feel this will occur naturally. A shorter last stride does help to get height in the jump, but it somewhat diminishes horizontal velocity.

**THE FLIGHT**

There are two basic techniques for flight in the air and each has the purpose of counteracting the forward somersaulting action created in the takeoff, so the jumper arrives in the sand in a good efficient landing position. Once the foot breaks contact with the board, the center of mass travels on a perfect parabolic curve to the landing; it can't be changed in the air but body position around it can be adjusted.

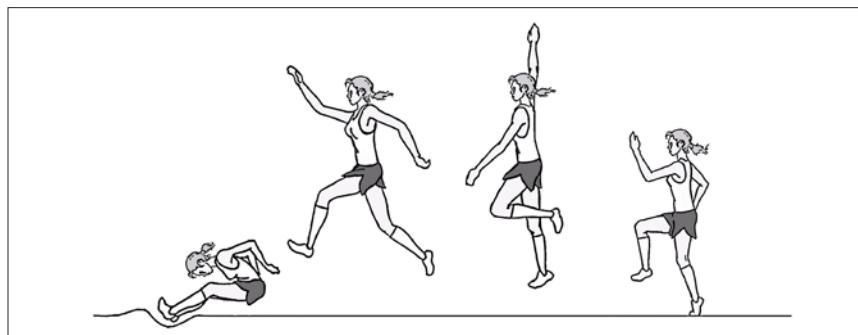
THE HANG

In the “hang” style of jumping, the somersaulting action is slowed by extending the arms and legs as far away from the center of mass as possible, thereby, slowing the forward rotation. The jumper will be in an inverted “C” position. The arms then are moved forward and down, lifting the legs in an action reaction movement. This style of flight is probably best for novice jumpers because it is easier to teach and quite effective; in fact, it is used by many world class jumpers.



THE HITCH KICK OR RUN IN THE AIR

In this movement in the air the arms are rotated in the direction of the forward rotation which creates an opposite reaction to the trunk, moving the hips forward. The left arm, driving up on takeoff, will reverse itself and rotate 540-degrees finishing behind the body. The right arm will rotate 360-degrees and also will finish aligned with the left arm behind the body. The legs continue the running motion in the air and contribute to counteracting the forward rotation by moving forward from the hip with a short radius and back with a long one.



THE LANDING

An efficient landing is critical to the length of the long jump. The object is to “break” the sand as far forward as possible with the heels, using straight legs, then move the rest of the body even or passed that mark.

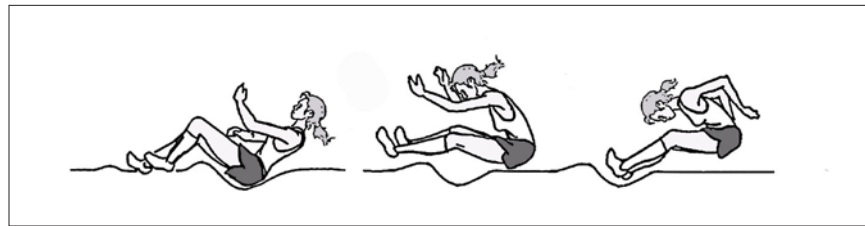
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There are three basic landing techniques: “buttocks in the hole,” “skid out” and “over the top.”

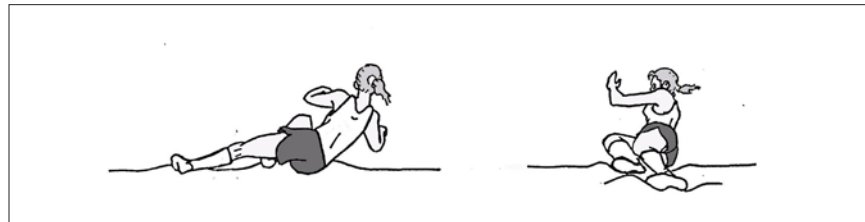
BUTTOCKS IN THE HOLE

In this landing technique, the legs are extended at about, or slightly above, the path of the center of mass. The feet blow a hole in the sand and continue forward, bending at the knees while the buttocks are lifted by slightly arching the back, eventually dropping into the hole. Where the buttocks land and where the feet break the sand should be the same. The arms should be back on initial contact and then brought forward.



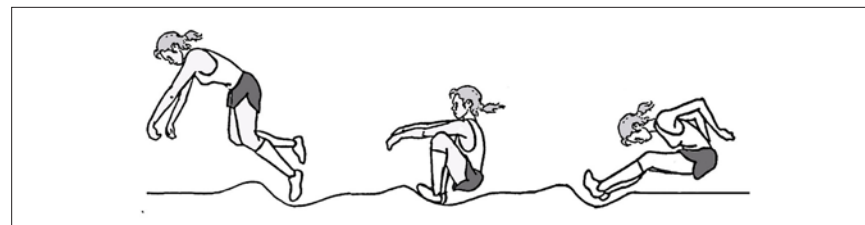
SKID OUT

In this landing, the left leg is extended out to the left and the body leans to the right. The left leg blows a hole, the right leg collapses and the right hip lands even to the right of the initial contact hole of the left leg. The arms are brought forward on contact.



OVER THE TOP

This landing is similar to the “buttocks in the hole.” Both legs collapse and the buttocks are brought to the heels. The arms are then moved forward and the body rotates forward.



Coaching Tips

1. Working on the track instead of the runway...
 - A) Establish a three- or four-step mark with tape and make sure this mark is “on.”
 - B) Do two sets of six run-throughs (with a break in between) and mark each coach’s mark (4-6 strides out from the board) and takeoff mark with small pieces of tape.

As a “pattern” begins to emerge, remove the pieces of tape that are exceptionally long or short (called erratics). Do this for several days until you have a good “pattern.”
2. Measure these marks and then transfer them to the long jump runway and begin to practice the run-up.
3. Emphasize a three-step rhythm during the run-up.
4. Establish a competition warm-up routine and continue to work to the coach’s mark.
5. Use a four-inch “lift box” to practice flights in the air and landing from short run-ups.
6. During competition, coaches should adjust the start marks of their jumpers to compensate for wind, different surfaces, nervousness or the athletes’ fitness to make sure the jumpers land exactly on the coach’s mark.

Do not adjust marks back from the takeoff board. The final four to six strides must be the most consistent and any change in stride length in an attempt to be “on” the takeoff board will diminish horizontal velocity.
7. Athletes should never do pre-meet warm-ups from the takeoff board backwards up the runway to check their approach. Runways are always placed to take advantage of a tailwind, so “checking” a step into the wind will never be correct when the jumper turns around and comes back down the runway with the tailwind.

Drills

Practicing the long jump is difficult to do in a sand pit that is not properly maintained and prepared daily for practice or meets. While jumping in practice or in competition, make sure the sand in the pit has been dug up and turned over several times and is watered down.

A good drill to practice without using a sand pit is to jump off a lift box with a short run, practice the flight and land in a foam pit borrowed from the high jump or pole vault events.

Another drill that can be used is the “standing long jump drill.” Stand tall in a sprint position, drive the free leg up with the left arm, drop the free leg and elevate the arms, arch back into a reverse “C”, pull down with arms and touch chest to thighs.

THE "LIFT" BOX

A four-inch lift box can be purchased commercially (they are called step aerobics boxes) or they can be easily constructed using a 2' X 2' piece of 1/2 inch plywood and a 2" X 4" stud. Cut the 2" X 4" into a frame and screw or nail it to the plywood. This lift box can also be used in the triple jump, pole vault and high jump.

Training for the Long Jump

As with every other event, universal principles of training apply to the long jump.

PROGRESSIVE OVERLOAD

In order for the physical capacity of the athlete to increase, the athlete's system must be subjected to stress, or overload. The body's adaptation to this stress results in increased capacity. This cycle of stress and adaptation is the foundation of all training. As discussed in a previous chapter, this is also known as the **SAID** principle, the Specific Adaptation to Imposed Demands.

SPECIFICITY

The body adapts to specific demands placed upon it; therefore, training for the long jump must specifically address the requirements, strengths, and skills needed to perform these events.

REPETITION

This principle is an outgrowth of the specificity requirements. In a technical event such as the long jump, the neuromuscular patterns of technique need to be enforced through repetition of movement. This usually entails dissecting the jump into components and performing them repeatedly with proper technique.

RECOVERY

In order for the body to adapt to progressive overload, it must rest and recover from the applied stress. Long jumpers need ample recovery for their legs to be fresh. Since much of the training they must do is quite demanding, long jumpers require plentiful rest even though they may not feel tired or worn out. Long jumpers cannot jump every day and expect to perform well in competition.

Explosiveness and Acceleration

Long jumps are explosions of the body off the ground. The body becomes a projectile accelerated by its own power. The training of a long jumper needs to specifically develop this explosiveness through weight training, plyometric training, and jumping.

Body Control (Kinesthetic Awareness)

To excel in the long jump, the athlete must develop the ability to control the position and posture of his or her body while in motion, both on the ground and in the air. The athlete needs to have a feel for the body and how it moves. This is the essence of athletics. Drills and repetition refine this awareness.

Considerations in Training

Both the coach and the athlete must have an understanding of the physical and technical skills needed to be a successful long jumper. This means understanding the importance of sprint speed and mechanics, leg strength, jumping power, rhythm, flexibility and proper jumping technique.

- Athletes should also have a basic understanding of the biomechanical principles that govern their event. With effort by the coach, these can be taught easily. Most important, jumpers need to understand the importance of the transfer of horizontal velocity into the jump.
- Developing sprint speed and mechanics are the most important features of training for the long jump. Long jumpers must train to be short sprinters.
- Successful long jumping requires good strength. The transition from approach to takeoff in the long jump is one of the most physically difficult skills in track and field. Preseason weight training and intelligent use of plyometric training throughout the season will help provide athletes with the strength they need to perform well and avoid injury.

- Good jumpers must also be flexible. The speed and power demands of the long jump place athletes with poor flexibility at substantial risk of injury. Long jumpers should include event specific stretching exercises into their daily workouts.

Since good long jumpers and triple jumpers are usually good sprinters, these athletes often compete in multiple events. It is the responsibility of coaches to adjust the training of jumpers to ensure they have adequate rest and recovery. Hard jumping or sprinting cannot be done every day.

Types of Training for the Long Jump

The types of training done for the long jump can be divided into three categories: general training, specific training and specialized training.

General training develops the overall physical capacity and fitness of the athlete. This encompasses basic running, weight training, plyometric exercise and rhythm development.

Specific training has a direct correlation to the skills necessary for long jumping. Often it is a refinement of general training. Sprinting, sprint technique drills, jumping technique drills and specific plyometric drills are included.

Specialized training duplicates the exact movements of long jumping. This normally involves exercises that replicate a specific feature or phase of the jump. Full speed approach runs, full jumps, transition drills with takeoff and multiple jumps are examples.

With high school athletes, the vast majority of training will be general in nature. First, the strength and performance levels of these young long jumpers will benefit much more from general training throughout most of the season. Coaches should develop jumpers as athletes first, then as long jumpers. Second, with a large number of athletes to guide, few coaches can spend the time necessary for intensive specialized training. Third, most jumpers are multi-event athletes, and general training fulfills the basic training demands of other events as well.

Specific and specialized training teach athletes to be good long jumpers. The proportion of specific and specialized training to general training should increase over the course of the season. Specialized training is the refinement of technique. At the high school level, it should account for only a modest amount of the total training program.

Like any event in track and field, the long jump requires many types of training...

- Running training (including sprinting)
- Plyometric training (including rhythm jumping drills)
- Weight training
- Technique drills
- Long jumping
- Flexibility training
- Jump testing

Running Training

Running workouts for long jumpers develop overall fitness, endurance, rhythm, sound running mechanics, and especially sprint speed. Emphasis should be placed upon building speed and developing a strong acceleration pattern with relaxed sprinting technique. Off-season long runs will strengthen the athlete and prevent injury. In-season training should include sprint training twice per week. Of course, the multi-event athlete also needs to train for his or her specific running event. This usually satisfies the general fitness demands of long jumping.

Sample Running Workouts

- Off-season: Easy distance runs (2-3 miles)
- Preseason: Long sprint repetitions (400-600 meters)
- All season: Short sprint repetitions (50-300 meters)
- Late season: Fast sprint repetitions
 - 30-60m from blocks or with a flying start
 - 50-70m at run-up rhythm
 - 10-15m with a flying start

Plyometric Training

Plyometric training specifically fulfills the needs of long jumpers by developing the ballistic muscular strength these events demand. Care must be taken not to over train and risk injury. Nonetheless, plyometrics are effective because they directly address several principles of training for the long jump.

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Sample Plyometric Workouts

- Rhythm plyometric drills (rhythm skipping and bounding)
- Easy multiple jumps (R-R-LL-R-R--LL-RR or L-R-L-R-L-R)
- Power skipping and bounding
- Hurdle hops
- Rhythm run-ups into a long jump

Weight Training

Weight training builds basic strength. The off-season is the time for long jumpers to work in the weight room. After the competitive season begins, weight training should become a maintenance activity.

Many long jumpers probably come to track and field directly from another seasonal sport, so they may not have time to undertake a full strength training program.

Sample Weight Training Exercises...

- Half-squats (4 x 10 @ 60% SRM* or 5 x 3 @ 90% SRM)
- Leg extensions
- Hamstring curls
- Step-ups or lunges
- Snatches or cleans

(SRM = single rep maximum)

Sample Jump Technique Drills

- Rhythm plyometric jumping (skips, bounds, multiple jumps)
- Rhythm high knees
- Standing long jumps (stressing positions and extension)
- Approach runs with a simulated takeoff (pop-off)
- Pop-offs (ups) (stressing rhythm and mechanics of transition)
- Hanging drills (simulate run-up and jump while hanging from bar)

To *train* specifically, athletes must *long jump* in practice. Full approach jumps are physically quite demanding and should not be overdone in training. Long jumping sessions should address the aspects of technique, endurance and maximum effort. Each session should emphasize a single aspect of the jump.

Important Note: Many coaches have their athletes long jump over hurdles as a means of increasing the height of the jump. This can be a disastrous training exercise. It develops improper biomechanics, leads to bad technical habits and increases the risk of injury to the athlete. Few, if any athletes can execute a jump properly with enough height to clear a hurdle. More likely, the jumper will learn to slow at the end of the approach to gather for the takeoff, then pull the legs up into a poor jumping position in order to clear the hurdle. Moreover, this drill uses the negative incentive of fear (hitting the hurdle) as motivation.

Endurance Jumps

By performing 6-10 jumps using good technique and rhythm, endurance jumps build specific jumping fitness and reinforce the need for consistency. Once again, the objective is to stress execution, not distance.

Maximum Effort Jumps

These specialized jumps emphasize effort and performance. After a thorough warm-up, the athlete should take three to six full approach jumps. More jumps may be taken with a shorter approach. Maximum effort jumps should be done once every two weeks early in the season and once a week with fewer jumps as the season progresses. A high school jumper who is competing in a dual or invitational meet every two to four days throughout the season may never need to do this type of training. Jumping far is for meets; jumping correctly is for practice.

Jump Testing

Although the real test of an athlete's progress in training is performance in competition, coaches should test the physical skills of their athletes periodically. This helps to identify individual strengths and weaknesses, while encouraging and motivating athletes as well. Test three to four times during the school year if possible, or perhaps twice during the season. Testing at the end of the season will provide both the coach and the returning jumpers with training goals for the next year.

Sample long jump test (two attempts each test)

- 50m sprint for time
- SRM Half-squat
- Vertical jump
- Hamstring curls for maximum reps
- Standing long jump
- 30m flying sprint
- 10 Bounds for distance
- Multiple jumps (e.g. H-FI-S--FI--H-S)

A Reminder About Rest

Many coaches and athletes fail to understand that rest and recovery are essential parts of the training process. “No pain, no gain” can only accomplish so much. Sore and exhausted muscles cannot perform up to their capacity. Sometimes it may be necessary to train *through* a meet; however, especially for jumpers, nothing improves performance more than rest.

Training for the High School Season

Periodizing training is dividing the season into a cycle of several phases, each emphasizing particular types of training and skill development during a specific period of time. Other types of training are not neglected, but are less emphasized during that period. The components that make up training for a skill event are numerous and complex. As a rule, three to four weeks seems to be the maximum period during which athletes can sustain improvement with any one type of training.

During a two to four week training phase, primary emphasis should be given to one type of training, secondary emphasis should be given to another type of training, and a somewhat less emphasis (maintenance training) to another. Within any training phase it is not wise to include more than three quality days per week, including competitions. The remaining days should be easy training and recovery days.

Training is stress. When constructing an athlete’s training regimen, coaches should plan how they are going to introduce and manage that stress. Recovery is an essential component of all types of training because all improvement occurs during recovery

while the body adapts to the stress. The long term consequences of the coach or athlete not planning for recovery or an athlete not listening to his or her body are illness, injury, overtraining, and burn-out.

	WEEKS	PRIMARY EMPHASIS	SECONDARY EMPHASIS	MAINTENANCE
Preseason	2 3	General training Rhythm plyos	Rhythm plyos Technique	Easy runs
Early Season	3 3	Power plyos Tech jumps	Sprint reps Specific plyos	Technique Sprint reps
Mid-Season	2 2	Tech drills/jumps Intervals	Specific plyos Tech drills	EP runs Specific plyos
Late Season	2-4	Special training Tech jumps	Technique	Sprint reps

SAMPLE 4-WEEK HORIZONTAL JUMPS TRAINING PLAN, APRIL 1-28

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1 Rhythm Plyos Sprint Workout 2 x (100-150-200)	2 LJ Technique 5x LJ Run-ups 10 S-Approach Jumps Power Skipping Power Hops	3 Team Meeting Warm-Up Stretch 5 x LJ Approach	4 Home Meet vs Mathias HS	5 Warm-Up Stretch 4 x TJ Approach	6 Jenner Relays	7 Easy Run or Rest Day
8 5x80 Tempo BUs Power Series: Skipping / Hopping Standing TJs Multiple Jumps 120-140 Contact	9 TJ Technique 8x S-Approach Jumps Hurdle Hops 1 x 400 Stride	10 Team Meeting Warm-Up Stretch 5 S-Approach LJs	11 Away Meet vs Campbell HS	12 Sprint drills TJ Tech Drills Rhythm Jumps	13 Block Starts 6 x 60 Power Plyos 6x30 Tempo BUs	14 Easy Run or Rest Day
15 5x LJ Run-ups 5 S-Appro TJs Power Series: Skipping / Hopping Standing TJs	16 LJ Tech Drills TJ Tech Drills Sprint Workout 100-50-100-200 4 min recovery	17 Team Meeting Warm-Up Stretch 5 x TJ Approach	18 Home Meet vs C.J. Yang HS	19 Rhythm Plyos Sprint Drills 3x150 Strides	20 Johnson Invitational	21 Easy Run or Rest Day
22 Rhythm Drills 8 x 50m Block Starts Power Skipping Hurdle Hops 3 x LL-RR-LL-RR	23 Easy R-Drills Sprint Drills 45 x 80 Strides	24 LJ Tech Drills TJ Tech Drills 4 x 120 Tempo	25 Team Meeting Warm-Up Stretch 5 x LJ Approach	26 Away Meet vs Toomey HS	27 Rest Day!	28 Easy Run or Rest Day

PLANNING AIDS FOR DEVELOPING YOUR TRAINING SYSTEM

LONG/TRIPLE JUMPERS' WORKOUT

Sequence

Date:

RUNNING WARM-UP:

Pre-stretch plus:

RHYTHM AND SPEED POLYOMETRIC DRILLS:

LONG/TRIPLE JUMP TECHNIQUE: Drills and Jumps

POWER PLYOMETRIC DRILLS:

- Skipping Hopping
- Bounding Multiple Jumps

RUNNING AND APPROACH DRILLS:

WARM-DOWN:

WEIGHT TRAINING:

NOTES:

SAMPLE LONG/TRIPLE JUMPERS' WORKOUT

Sequence

Date: Mon April 9

- 1 **RUNNING WARM-UP:**
Pre-stretch plus: jog 1600m
- 2 **RHYTHM AND SPEED POLYOMETRIC DRILLS:** in training flats
- 3 **LONG/TRIPLE JUMP TECHNIQUE:** Drills and Jumps in spikes on runway
*3-5 approach *3-5 box takeoff and landings
*2x3-step pop-ups *2x 3-step jumps
- 4 **POWER PLYOMETRIC DRILLS:** 2-step combos: 4-5x RRL/LLR on grass in training
 Skipping Hopping
 Bounding Multiple Jumps flats (step comes at 35% HOP-30% step-35% Jump)
- 5 **RUNNING AND APPROACH DRILLS:** in spikes
2x300m @ 60% - 3x200m @ 70% - 4x100m @ 80% - 2x50m @ 90%
- 6 **WARM-DOWN:** jog 800m
- 7 **WEIGHT TRAINING:** Phase / Speed/Strength Series

NOTES: