

I. INTRODUCTION

Sprinting is an activity which - to a large extent - seems to depend on the coordination of both nerves and muscles, and on the ability of the central nervous system to eliminate as many braking and friction movements as possible. Mechanically speaking, sprinting seems a rather simple skill. In reality, however, it is a difficult blending of efficiently applied forces through the human lever system. The application of forces yields maximum performance only when the the particular strengths of the sprinter are properly balanced to coordinate the actions of the entire body.

II. SPRINT PERFORMANCE CHARACTERISTICS

A. *Qualities and Characteristics in Sprinting*

A knowledge of the qualities and characteristics of good sprinters is essential to the identification of promising sprint potential. Some of these qualities are:

1. Coordination.
 - a. The skill of sprinting at very high rates of movement requires great coordination. Though often overlooked, this ingredient may be the most crucial one.
2. Speed.
 - a. Tied in closely with coordination, this quality is obviously a must. The athlete must have abilities to move his or her limbs at a high rate and express power through those movements to propel the body down the track at high speeds.
3. Strength/power.
 - a. As sprinters are required to overcome inertia in as short time as possible, superior strength of the primary muscles involved in sprinting is key.
4. Flexibility.
 - a. Good sprinters possess a high degree of flexibility in the hip and ankles. Increased flexibility allows for decreased muscle resistance and easier movement through the range of motion (dynamic flexibility).
5. Psychological.
 - a. Common psychological traits in sprinters include:
 - i. High self-image.
 - ii. Aggressive.
 - iii. Confident in competition.
 - iv. Relaxed in competitive and pressure-intensive situations.
6. Reaction time.
 - a. Sprinters possess shorter reaction times than many other athletes. This, of course, is of importance in the starting skill of a sprinter.

B. *Talent in Sprinting and Control Tests*

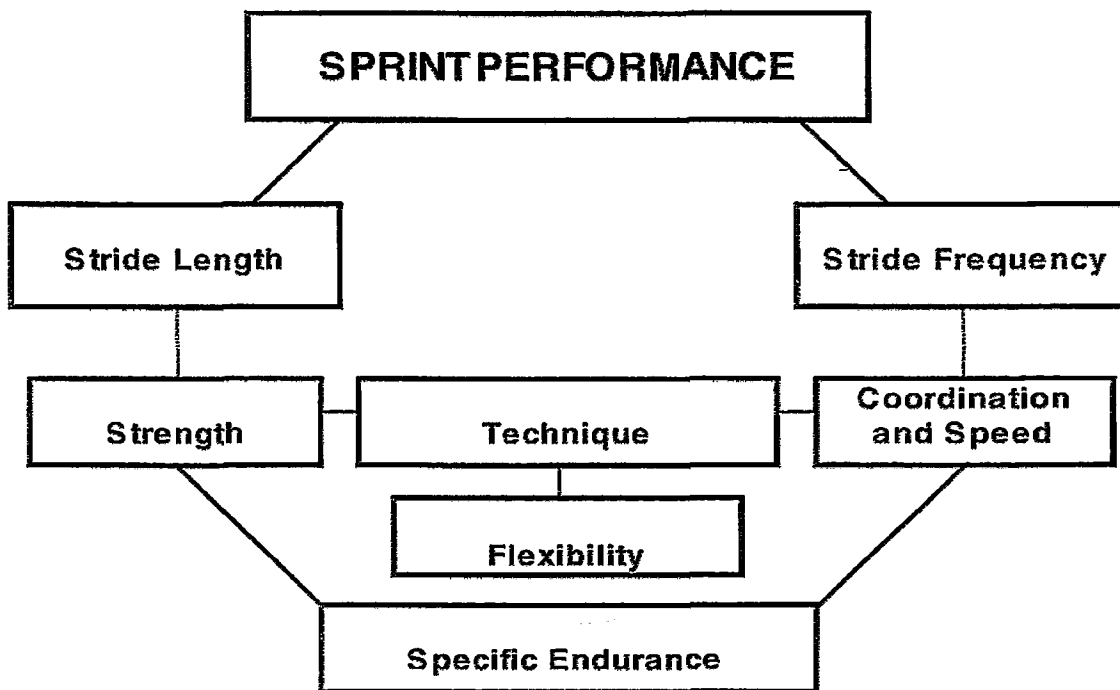
In our country, mass identification of sprinting talent comes as a result of spotting "raw" talent through observing athletes perform in team games, community activities, and physical education classes. In many settings, this has proven quite successful; largely due to the abundant talent pool in this country. However, this method of talent identification can easily overlook many potential sprint talents. Athletes should be exposed to training in a disciplined program before any real conclusions can be drawn regarding their true sprint potential. Standardizing talent-selection tests in this country would tell us very little about sprint potential. Such tests are only valid when athletes come from backgrounds of similar preparation. This is not a serviceable possibility. Therefore, we must first secure our athletes within a well-coached program. This act will provide the proper background where a coach can accurately evaluate an athlete's sprint potential. Once established in a well-balanced program, control tests can be used to evaluate and monitor both training progress and potential talent.

1. Commonly used tests for identifying talent for the sprint events.
 - a. 30m flying start: absolute speed and full-speed running technique.
 - i. Use a 20m zone to reach top speed for the next 30m section. Time the 30m flying run portion.
 - b. 30m crouch start: starting acceleration.
 - ii. Time 30m sprint from blocks or standing start. Start watch on first movement of athlete.
 - c. 60m crouch start: starting acceleration and transition to full speed.
 - iii. Time 60m sprint from blocks or standing start. Start watch on first movement of athlete.
 - d. 150m standing start: speed endurance (alactic anaerobic).

- e. 300m standing start: speed endurance (lactic anaerobic).
- f. 600m standing start: general endurance and strength endurance.
- g. Standing triple jump: strength and power.
 - i. Use a starting position where both feet are placed together. Jump off both feet and land on one foot, then bound to the other foot, and finally jump into the sandpit landing on both feet.
- h. Standing long jump: starting power.
 - i. Use a starting position where both feet are placed together. Jump off both feet into the sandpit landing on both feet.

C. Developing Coaching Objectives for the Sprints

Developing concise coaching objectives is prerequisite to your coaching effectiveness. In order to develop practical and concrete objectives, one must first closely examine the key ingredients involved in improving sprint performance. To that end, use the following chart:



In simple terms, stride length and stride frequency determine maximum speed. To improve speed, an increase in one or both of these parameters must occur within the context of sound technique. The coach must keep in mind that it is very possible to increase speed by improving one parameter at the detriment of the other. Hay has illustrated this point with the following example:

	<u>STRIDE LENGTH</u>		<u>STRIDE FREQUENCY</u>	
INITIAL SPEED:	6 Feet	X	3 Per Second	= 18 F.P.S.
NEW SPEED:	5 Feet	X	4 Per Second	= 20 F.P.S.

Both stride length and stride frequency can be increased through improvements in strength, technique, endurance, and flexibility. All these factors work together by complex, "blending" means to produce better sprint performance. A balanced program and thorough teaching sequence will improve both stride length and stride frequency. As we proceed through this course, it will become more clear as to how these factors can be developed holistically. Firstly, we will present in some detail the basic structure of training units used to meet

the objectives of increased strength, endurance, and speed. Secondly, we will then present a discussion on various sprinting exercises. This will provide a better understanding of techniques and tactics in the sprints.

III. Training for the Sprint Events

The sole topic of training could be a course in and of itself. Hence, much time is devoted to the development of this topic at Level II. In Level I, however, we must restrict ourselves to defining the basic components of training and providing several examples of work designed to train these components. Throughout this discourse, it must be kept in mind that NO one component can be trained in isolation. Undoubtedly, work designed to stress one component will have a training effect on all of the other components as well. Therefore, one must always view training for any event in a holistic manner. We as coaches must also be prepared to BALANCE the volume and intensity of the work to meet individual needs and circumstances.

A. Coordination

Coordination is near the top of the list of influential factors in realizing sprinting success. The athlete must be able to coordinate all the limb movements and force applications to optimize sprint potential. All of the exercises in the learning sequence below require varying degrees of coordination. In their own ways, all of them contribute to the increasing of a sprinter's coordination and, therefore, their ultimate performance.

B. Speed

The extension of the technical work described below to maximal and near maximal paces is the basis for speed development. Speed development should be done on good training surfaces which are level, dry, and neith too hard nor too soft. The athlete must be well warmed-up and loose. Air temperatures should be warm to facilitate the efficiency of this type of training. Examples of speed work might include:

- a. Distances of 20 to 60 meters performed at an intensity level of 90 to 95 percent. Run 2 to 3 sets which consist of 4 to 5 repetitions using a recovery period of 3 to 6 minutes.
- b. Choose from standing, rolling, and flying starts for the above speed workouts.

C. Strength

Strength is a requirement of all sprint events. As we stated above, strength contributes to both stride length and stride frequency, as well as effecting other training parameters. Strength can mean many things. For instance, the power to start explosively or the ability to achieve adequate leg-lift at the end of the 400m. The coach must balance the needs of the athletes along with their respective events in order to design an appropriate strength program. Strength work can be broadly classified into one of the following areas:

a. General.

General strength work is that which is designed to provide an all-around, balanced base of strength. It is the foundation upon which specific strength and technique work is laid. The exercises used to develop general strength do not relate closely to any event movements. Thus, they merely have the primary objective of developing the prerequisite fitness level needed to prepare for more advanced training. Some examples of general strength exercises are:

- i. Circuit training that uses the athlete's own body weight for resistance.
- ii. Weight training that uses 20 to 100 percent of the athlete's body weight for resistance is performed at a rate of 8 to 10 repetitions for 3 sets.

b. Specific.

Specific strength work is that which uses exercises and methods to develop the type of strength most consistent with the strength demands of each sprint event. Exercises relate closely to the movements of sprinting and directly contribute to the technical development of the athlete as well. Examples of specific strength exercises include:

- i. Resistance work using harnesses.
- ii. High-knee routines.
- iii. Bounding.
- iv. Hopping.
- v. Re-bounding over hurdles.
- vi. Sprinting up hills.

The scope of specific strength exercises is limited only by the imagination of the coach. Development of appropriate exercises in this area comes only through a proper understanding of individual event

requirements and of the athlete training for those events. Specific strength requirements for a 100m sprinter should and do vary quite sharply from the needs of a 400m sprinter. This results from the difference in strength demands between the two events.

D. Flexibility

This is the ability to perform movements with a wide range of amplitude. Suppleness within all of the leg muscles and major joints is important in the advancement of technique and the prevention of injury. Special attention should be placed on the following regions:

- a. Achilles and gastrocnemius.
- b. Hamstring group.
- c. Hip flexors and extensors.
- d. Shoulders.
- e. Trunk.

E. Endurance

Though we do not usually think of endurance in the discussion of the sprint events, it is an important quality which must be made a part of every sprinter's training program. Endurance work can be broadly classified into one of the following areas:

a. General.

The purpose of general endurance work is to develop aerobic capacity. Examples of work which may be used:

- i. Continuous running.
- ii. Fartlek.
- iii. Games requiring continuous movement of long duration.
- iv. Tempo runs of 100 to 600 meters with short recoveries between each repetition.
- v. Circuit training.

b. Specific

The purpose of specific endurance training is to develop the types of endurance most consistent with the competitive demands of the various sprint events. All sprinting requires endurance to some extent and in some form. The short sprinter - the 100m to 200m athlete - requires a high level of development of their alactic, anaerobic endurance. Examples of this type of work might include:

- i. Distances of 80 to 150 meters performed at an intensity level of 90 percent. Run 4 to 8 repetitions using a recovery period of 5 to 8 minutes.
- ii. Distances of 50 to 80 meters performed at an intensity level of 90 to 95 percent. Run 3 to 4 sets which consist of 3 to 5 repetitions using a recovery period of 2 to 4 minutes.

FIGURING THE ATHLETES' GOAL TIMES

$$\frac{\text{Best time for the event} \times 100}{\text{Desired intensity level}}$$

= Goal time for each repetition.

For example, let's assume 80% as the desired intensity level of a 400m athlete with a 52 second PR:
 $(52 \times 100) / 80 = 65$ seconds.

The 400m athlete requires great development of the lactic anaerobic system as well. Examples of this work might be:

- i. Distances of 150 to 500 meters performed at an intensity level of 90 percent. Run 1 to 3 repetitions using a recovery period of 15 to 30 minutes.
- ii. Distances of 100 to 600 meters performed at an intensity level of 80 to 85 percent. Run 6 to 12 repetitions using a recovery period of 3 to 6 minutes.

IV. TEACHING SPRINTING USING EXERCISE SEQUENCES

With these training components in mind, let's now turn our attention to the areas of technique and tactics by examining how the coach can better prepare the athlete through the implementation of a strong teaching progression. The use of sprint exercises or "drills" has been commonplace in sprint training for some time. This section intends to present some common, yet tested exercises used in the teaching and development of proper sprint technique and its event-specific conditioning. In each instance, we will progress from general to specific, whole to parts, and gross movements to fine. Note that cue words and key phrases are highlighted for special emphasis.

A. *Sprint Striding*

Sprint striding is that part of the sprint exhibited by full-flight running action. It is the form of running the athlete achieves after accelerating from a standing or crouch start. Due to the fact that it is the part of the sprint which occurs during the majority of the race, we begin with a discussion of this aspect of sprinting form. It should be evident that this statement is not true of the short dashes which are contested indoors. Efficient striding is what the athlete hopes to achieve through an effective acceleration phase.

a. Sprint technique runs.

These are the most general of exercises and should be the initial training used in teaching and/or modifying the technique of sprint striding. The exercise is performed by having the athlete run from a standing start over 40 to 60 meters, while emphasizing one or more of the objectives listed below. The speed of the run should be fast, yet not at the athlete's maximum level. The coach should view the trial runs from the side, front, and rear positions. As a coach, your observation point should ideally be somewhere between 20 to 30 meters away. This allows you to see the action clearly and holistically.

i. Posture.

CUES: HIPS TALL. FOOT PLANTS UNDER CENTER OF MASS

The first objective should be to establish good posture. The athlete should perform the technique run while seeking to accomplish one or more of the following tasks. The suggested order follows:

- (a) Tall posture and up on toes.
- (b) Head level.
- (c) Shoulders down, not hunched.
- (d) Relaxation in face and shoulders.

ii. Arms.

CUES: ANTICIPATE AND INITIATE LEG MOVEMENTS WITH THE HANDS.

The arms play a considerable role in coordinating the movements in sprinting. A long time ago, Percy Cerutti wrote that runners do not run with their legs, they run ON their legs. In reality, they run with their ARMS! The arm cycle precedes the leg cycle. Arms initiate the pattern and control the speed of the legs. During the technique runs, you must emphasize one or more of the following tasks:

- (a) Arms moving forward and backward only, NOT across the body.
- (b) Hands moving to the center line of the body at shoulder height and back to the hip.
- (c) Elbow angle is approximately 90 degrees when hand is forward and slightly larger on the back swing.
- (d) Arms move at the shoulder joint and shoulders remain perpendicular to the direction of travel.
- (e) Hands held in a relaxed, natural position.

iii. Legs.

CUES: TOE UP. HEEL UP. KNEE UP. ANKLE STEP OVER THE KNEE.

The leg action should occur under the body with NO emphasis on reaching to achieve greater stride length. Instead, emphasize one or more of the following tasks:

- (a) Thigh lift through full range of motion.
- (b) Tight and active heel recovery following push-off.

- (c) Foot plants under the center of mass.
 - (d) Active plant with lower leg. Downward and backward claw with thigh and lower leg.
 - (e) Acceleration of the thigh on both upward and downward movements.
- iv. Butt kicks.

CUES: HIPS TALL. TOE UP. HEEL UP. DO NOT SCUFF FOOT INTO THE TRACK.
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This exercise is used to teach the athlete the sensation of good, active heel recovery. In addition, proper hamstring conditioning and speed of movement can be learned through its use. Emphasis is on the following tasks:

- (a) Tall posture with foot plants under the center of mass.
 - (b) Quick and continuous snap of the heel to the butt without compromising posture.
 - (c) Slow, horizontal displacement of the body at a jogging pace or done in place.
 - (d) Initiate leg movements with the hands and arms.
 - (e) Running kicks where movement is performed on every step.
 - (f) Varied rhythm kicks where athlete performs movement on every 2nd, 3rd or 4th step.
- v. High knees.

CUES: TOE UP. HEEL UP. KNEE UP. HIPS TALL. ANKLE STEP OVER THE KNEE.

High knee drills are an excellent means of enforcing proper posture and range of motion with both legs and arms. These exercises can be done in marching, skipping, and running modes. They are commonly referred to as "Mach drills" or "A and B drills" after the former National Sprint Coach of Poland - Gerard Mach. Emphasis in these exercises is placed on the following tasks:

- (a) Tall posture with foot plants under the center of mass.
 - (b) Knees lifted to position where thighs are parallel with horizontal running surface.
 - (c) Heel drawn tight to buttocks and toe dorsi-flexed.
 - (d) Arms move through full range of sprint arm-action.
 - (e) Horizontal displacement of body is not as important as proper movements of arms and legs.
 - (f) Speed of displacement down the track may vary and care must be taken to maintain control.
 - (g) Straighten the rear/support leg on each step.
 - (h) Keep the body leaning slightly forward at the waist.
 - (i) Emphasize rhythm and consistency of movements.
 - (j) Legs work directly up and down: A exercise. Or allow for lower-leg extension on the downward movement to simulate an active, clawing action: B exercise
 - (k) Progress from skipping to running. Then, to running with an emphasis on preparing for an active ground contact with the foot.
- vi. Fast leg.

CUES: HIPS TALL. ACTIVE TOE UP. HEEL UP. KNEE UP. TRY TO PLACE THE SUPPORT FOOT UNDER OR JUST SLIGHTLY BEHIND CENTER OF MASS. ANKLE STEP OVER THE KNEE.
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This exercise is one of greater advancement and demands good coordination and timing on the part of the athlete. The objective is to isolate the proper motion of the sprint stride into its respective left- and right-side movements in order to teach the proper mechanics of the leg through the recovery cycle. Speed of movement is the ultimate objective, but most athletes will need to learn this exercise at a slower speed before progressing to faster speeds.

- (a) Single-side actions.
From a jog, the athlete attains a tall posture by being on the toes. In concert with the arms, one leg is quickly cycled through the recovery cycle: lifting the thigh, snapping the heel to the butt, and accelerating the foot back to the track. Performance of this movement is alternately executed with 2 to 3 jog steps. When performed properly, the athlete senses a feeling of acceleration with each contact of the foot on the track. Emphasis is on the following tasks:
 - Full and proper range of motion.
 - Acceleration of both thigh and heel recovery upward.

- Acceleration of thigh downward.
- Active cycling and clawing of foot in preparation for contact with ground again.
- Lower leg kept folded tightly to the thigh until full thigh lift is achieved.
- Quick actions of the hands and arms in proper sprint motions.

(b) Dual-side actions,

This form of the "fast leg" is performed in the same way as the single-side action described above, except the movement alternates from left side to right side following the 2 to 3 jog steps between executions. After the athlete becomes accomplished with this exercise, he or she can then accelerate quickly and perform its actions at rates near maximum speed. The ultimate objective is to improve speed of movement and neuromuscular timing and coordination. In other words, the athlete must strive to perform an efficient movement on each and every stride when they sprint at a full-flight pace.

vii. Straight-leg bounds.

**CUES: HIPS TALL. TOE UP.
POP HIPS FORWARD ON EACH FOOT CONTACT.**

This exercise is designed to isolate and emphasize the forward displacement of the hips through force application via the gluteals and hamstrings. These muscle groups play a major role in sprinting. Thus, this exercise teaches the athlete how to effectively prepare for ground contact by applying the necessary force during that phase. Focus should be placed on the tasks below:

- (a) Starting from a hips-tall position, take several running steps to gain momentum.
- (b) Keep the feet dorsi-flexed with the toes up and the knees locked. Bound from leg to leg.
- (c) Foot plants should be executed directly under the center of mass.
- (d) Maintain an erect posture. Do NOT lean backwards.
- (e) Feel the hips "pop" forward on every foot contact and feel the body gain velocity.

B. Starting Acceleration in the Sprints

The start is critical to the sprinter from a psychological, as well as a purely physical, point of view. If he or she is to be competitive at a high level, that sprinter must be "out" with the rest of the field. Characteristics of good starting acceleration are full and powerful range of motion actions with the arms and legs, along with a low-driving posture. Emphasis is usually placed on the generation of horizontal forces to overcome the body's inertia, efficiently increasing speed, and allowing for a smooth transition to the proper posture of the full-flight sprinter.

1. Driving sprint accelerations.

These are similar in nature to the Sprint Technique Runs described above. From a low, standing start position - with hands hanging freely in front and feet approximating a block setting - the athlete uses a driving action to accelerate out over a distance of 15 to 20 meters. Points to be emphasized:

- a. Low starting posture with body piked at the waist.
- b. Face down with neck in alignment with spine.
- c. Strong, driving arms.
- d. Low heel recovery on initial strides with heel recovery becoming higher as speed increases.
- e. Greater extension of the legs at the hip, knee, and ankle joints during driving strides.
- f. Keep back strong and straight.
- g. Gradual raising of the torso - and focus of the eyes - as speed increases.
- h. Foot plants executed on the front of the foot and under, or slightly behind, the center of mass.

2. Cadence sprint accelerations.

Performed similarly to the Driving Sprint Accelerations. Except that the emphasis is on a quick cadence action, rather than a long driving action with the arms and legs. Emphasis is placed on the following:

- a. Low starting posture with body piked at the waist.
- b. Face down with neck in alignment with spine.
- c. Quick arm cadence.
- d. Low heel recovery on initial strides with heel recovery becoming higher as speed increases.
- e. Quick driving action of legs in which full extension of the leg is not emphasized.
- f. Keep back strong and straight.

- g. Gradual raising of the torso - and focus of the eyes - as speed increases.
 - h. Foot plants executed on the front of the foot and under, or slightly behind, the center of mass.
3. Stick drill accelerations.

This exercise is similar to the Cadence Sprint Accelerations and combines features of that exercise, as well as the Driving Sprint Accelerations, to teach a smooth PATTERN OF ACCELERATION from a dead start to full-speed striding. By pattern of acceleration, we mean a stride pattern where each stride becomes progressively longer as speed increases. The stick drill acceleration is performed when the athlete accelerates from a standing start over a pattern of sticks laid on the track, stepping just in front of each successive stick. The sticks are laid out at increasingly greater intervals to force the athlete to adapt their steps to a pattern of acceleration. For example, the sticks might be placed as follows:

<16>		<20>		<24>		<28>		<32>		<36>		<40>		<44>
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The above numbers refer to the number of inches between the sticks. This example uses 4-inch increments, however, you may find 6 to 8 inches to be appropriate increases for some of your athletes. The pattern does not have to match the actual stride pattern of the athlete. In most cases, it should be less than the actual stride lengths of the sprinter. This will enforce the action of placing the foot under and not in front of the center of mass. The interval between sticks becomes closer and closer to the maximum stride length of the athlete, then the sticks end and the athlete continues the acceleration phase without the guidance of the sticks.

4. Harness accelerations.
- Harness work is a means of teaching proper posture and force application in the acceleration phase by appropriately applying external resistance. A "harness" is attached to the athlete at the waist and/or shoulders and is held from behind by another athlete or coach. An appropriate degree of resistance is applied to cause the sprinter to feel the force application necessary to move them out of the blocks and down the track. This exercise is also an excellent means of developing starting strength. Perform the harness work in the following two basic modes:
- a. Driving.
 - i. Exaggerated driving strides with full extension as described above in Driving Sprint Accelerations.
 - b. Cadence.
 - ii. High-frequency, quick strides as described above in Cadence Sprint Accelerations.
5. Sled accelerations.
- The sled is another means of applying an external resistance to the accelerating sprinter. The sled can be an old tire, or some other self-manufactured device, which slides or rolls easily down the track. The same harness as mentioned previously is attached to the sled and the athlete sprints down the track. However, in contrast with the means of resistance in Harness Accelerations, the athlete pulls the weighted "sled" rather than another athlete or coach. Advantages of the sled method are that the resistance is usually more uniform and can be adjusted easily by varying the amount of weight on the sled. A disadvantage to using the sled might be that the coach loses the direct feedback gleaned through the feel of the harness method.

C. Sprint Start

In sprinting, much attention is given to the start. It is true that the start is important. However, keep in mind that it is not necessarily true that the first one out of the blocks will be the winner. More likely, the athlete whose start allows them to achieve their best sprinting form the soonest and keep it the longest will be the frontrunner. The following is a sequence of exercises that may be used to teach the beginning sprinter the skills necessary to accelerate properly from a crouched starting position:

1. Low standing start.
 - a. Stand with feet about 1 1/2 and 2 foot lengths from the starting line respectively.
 - b. Bend over at the waist and let the arms dangle downward toward the starting line.
 - c. The start is executed by slowly shifting the weight forward until the athlete just begins to lose balance.

At this point, there is a forceful push-off with both legs and the start begins.
2. Four-point start.
 - a. Same routine as the Low Standing Start, except now both hands - upon their fingertips - are placed on the track behind the starting line.
3. Block placement.

Establishing the most efficient starting position requires time and patience. Comfort and mechanically sound positions are equally important. A balance must be struck between these two goals.

- a. Must be a matter of individual preference and adjustment.
 - b. To begin, place the blocks so the front block is 1 1/2 to 2 foot lengths from the starting line. Place the rear block 2 1/2 to 3 foot lengths from the starting line.
 - c. If the blocks have adjustable faces, the rear block is usually set at a steeper angle than the front block in order to present a surface which is perpendicular to the direction of force application.
 - d. Align the blocks in the direction of the run.
 - e. For starts on the curve, the blocks should be angled in such a manner as to fall on a line tangent to the curve at its most distant point from the starting line. This placement will demand that the sprinter place their left hand a short distance behind the starting line.
4. "On your marks" command.
 - a. Athlete places feet against and crouches into their blocks.
 - b. Hands are approximately shoulder width apart and behind the line forming a bridge of support with the fingertips and thumbs.
 - c. Weight is evenly distributed between the hands, the foot of the front leg, and the knee of the rear leg.
 - d. Head is held in a relaxed manner and the entire body is kept balanced overall.
 5. "Set" command.
 - a. Rear leg is lifted from the ground.
 - b. Both legs are flexed. Front knee at approximately 90 degrees. Back knee at approximately 120 degrees.
 - c. Foot pressure is maintained against both blocks.
 - d. Hips brought slightly higher than shoulders.
 - e. From a side view, shoulders are directly over the hands.
 - f. Eyes maintain a nondescript, low gaze. They do not focus on any one point.
 - g. Arms straight, but are not locked at the elbow joint.
 - g. Focus is on exploding into starting movement, NOT on reacting to the sound of the gun: motor response over sensory response.
 6. First sprint strides following the gun.
 - a. Drive off the foot pads of both blocks with a longer force application against the front block.
 - b. Concentrate on moving the hands quickly to initiate movement out of the blocks. Rear-side hand backwards and front-side hand forwards.
 - c. The force applied by the rear leg is short and explosive, followed by a low heel recovery to allow for a quick placement of the first step onto the track.
 - d. Front leg extends forcefully to provide needed drive out of blocks.
 - e. The body moves both forwards and upwards.
 - f. These first steps follow the pattern of acceleration mentioned earlier.

D. Sprint Lift

This technique of sprinting is most commonly seen in the finishing stages of the race. It is often apparent when the athlete comes off the bend in the 200m. Here the athlete straightens up into a strong and tall sprint kick which is continued down the straightaway. It requires strength, flexibility, and high development of sprint technique. Coaches must stress the following points:

1. Tall posture. Run tall and forcefully, yet relaxed.
2. Shoulders should be square with the direction of sprinting.
3. Head kept level with the chin down.
4. Arms working strongly through their full range of motion. Hands lifting.
5. Relaxed, but still fast. Light and quick on toes should describe the athlete's overall feeling using this technique.
6. Run as if on "hot coals". Be fast and active.

E. Curve Running

In addition to running well on the straightaway, sprinters must be able to run effectively on the curve. Recent studies of 200m sprinters at the World Championships prove insightful. The studies indicate that the best 200m athletes can still run within several hundredths of their best 100m performance on the straight when they sprint the curve during the first 100 meters of the 200m race. Emphasize the points below:

1. Run close to the inside of the lane at all times on the curve, but NOT on the inside line.
2. Carry the left arm lower than normal and work it back strongly.
3. Lean slightly towards the interior of the track.
4. Point your navel towards the arc you wish to follow as you sprint around the curve.

5. Work the right arm through a full range of motion, but it should not be thrown across the body.

V. TACTICS FOR SPRINT RACING

Many coaches and athletes do not often think of tactics in the sprint races as we normally do in distance events. However, there are some points that must be made in this area, especially several regarding the distribution of effort and psychological preparation. Many of the key points to be cognizant of in the sprint events are below:

1. Move without delay into the set position on the starter's command. One does not want to be caught still rising if the gun is quick.
2. Work on a quick and consistent reaction to the gun by training for this aspect on a regular basis.
3. Establish your own race pattern prior to competing in practices or meets. Competition is not a good environment to learn sprint technique.
4. Be prepared to race in any of the lanes.
5. Learn to run your own race whether your competition is next to you or several lanes away.
6. Train only to start upon the gun. Do not attempt to gain an advantage by predicting the starter's cadence of commands.
7. To that end, vary the starting command cadence during training so as to not allow the athlete to assume a standard time spent in the set position.
8. Always check that the blocks are still set to your specifications and that they are securely anchored.
9. Always run THROUGH the finish line! Know the location of the finish line. Dipping at the line should be an action that is rehearsed, but used only when absolutely necessary in competitions.
10. Never treat preliminary rounds of competition lightly. Know beforehand what time or place is required in order to qualify to the next round of competition.
11. Know at what times of day your biggest races of the season will be run. Then mentally prepare in advance for competition at those hours.
12. Systematically warm up and cool down before and after every race.
13. Know the shoe requirements at every competition's track. Be prepared with a wrench and extra spikes.

VI. RELAY EVENTS AND TACTICS

A. 4x100m Relay

1. Rules.
 - a. Entire race run in lanes.
 - b. The exchange must occur within the 20 meter zones.
 - c. A 10 meter acceleration zone may be used by the outgoing runner. This zone is used for the benefit of gaining speed only as they baton cannot be exchanged until the 20 meter zone has been reached.
 - d. Baton specifications: 28 to 30 centimeters in length, 38 millimeters in diameter, and no heavier than 50 grams.
 - e. The method of exchange is a "blind" hand-off.
2. Description of positions.
 - a. Runners #1 and #3 run on the inside of the lane, while runners #2 and #4 position themselves on the outside of the lane.
 - b. Runners #1 and #3 carry the baton around the curves in their RIGHT hands, while runners #2 and #4 carry the baton down the straights with their LEFT hands.
 - c. Positions within the lane must be maintained before, during, and after the exchange in order to avoid possible entanglement between the incoming and outgoing runners.
3. Mechanics of the exchange.
 - a. As the incoming runner reaches the predetermined mark, the outgoing runner accelerates into the 20 meter zone, while both runners maintain their respective positions within the lane.
 - i. The baton receiver starts accelerating when the incoming runner reaches the predetermined mark. This mark should be both highly visible and easily recognizable to the runners.
 - ii. The mark is usually placed 20 to 25 foot lengths before the acceleration zone. This template must be adjusted through simple trial and error. It may need adjusting due to weather conditions.
 - iii. The incoming runner must be encouraged to run THROUGH the zone in an attempt to "chase" the outgoing runner out of their exchange zone.
 - iv. The outgoing runner must attempt to leave the incoming runner behind. This "getaway" will maximize the speed of the baton through the zone.
 - v. Only consistent practice will allow the above techniques to yield continual success.

- b. On a verbal command from the incoming runner, the outgoing runner places their receiving hand back and the exchange is effected.
 - i. The DOWN exchange requires the following steps:
 - Receiver's arm held back with palm up and thumb extended toward the body. This gives the baton passer a good and steady target.
 - Baton passer extends arm toward the receiver's hand and then uses a downward wrist action to place the baton into the open hand of the outgoing runner. There is not a swinging, downward move of the entire arm on the part of the incoming runner. Only the wrist is moved downward to execute the actual exchange.
 - The receiver should have a firm grip on the end - not the middle - of the baton, so no adjustment needs to be made with the baton once it is exchanged.
 - ii. The UP exchange is performed as follows:
 - Receiver's arm held back with fingers and thumb formed into a "V" pointing down towards the track.
 - The passer sweeps the baton upward with an extended arm and gives the receiver the portion of the baton closest to the passer's hand.
 - Minor adjustment of the baton in the receiver's hand is usually required.

4. Tactics.

- a. As a general rule, the three outgoing runners assume standing or three-point starting positions.
- b. In the starting position of the outgoing runner, the foot placed to the rear normally corresponds to the hand receiving the baton. This allows for a better view of the incoming runner.
- c. Attempt to keep the baton moving at a constant speed through the zone.
- d. The incoming runner must assume the bulk of the responsibility in executing the baton exchange.
- e. The lead-off runner must be a reliable starter and a solid curve runner.
- f. The #2 runner should be one who is capable of sprinting a long leg and finishing strongly through the second exchange zone.
- g. The #3 runner must be an excellent curve runner as well.
- h. The #4 runner must be confident, controlled, and sprint well under pressure.

B. 4x400m Relay

1. Rules.

- a. Race is run with a 3-turn stagger. This means that the first runner runs in lanes all the way, then the second runner runs the first turn in lanes before cutting in.
- b. The exchange of the baton must occur within the 20 meter zone allowed.
- c. There is no acceleration zone leading into the exchange zone.

2. Mechanics of the exchange.

- a. The method of exchange is visual so that the outgoing runner can better judge the position and finishing speed of the incoming runner.
- b. The receiver takes the baton in the left hand while already moving and keeps his or her eyes on the baton.
- c. The receiver faces toward the inside of the track and places their left hand upwards and towards the passer to present a good target for the baton.
- d. The exchange is usually a DOWN exchange with the receiver's palm facing upwards.
- e. Upon receiving the baton, the outgoing runner accelerates through the remainder of the exchange zone and switches the baton to the right hand. This immediately prepares them for the next exchange. Waiting until the final meters of a 400 meter leg to change hands is far more dangerous as fatigue may cause the runner to lose the baton.

3. Tactics.

- a. The first runner must realize that the stagger is set for 3 turns. Thus, he or she must not become disconcerted by the supposed appearance of athletes in the outside lanes holding substantive leads.
- b. The second runner must be aggressive and committed to moving ahead or maintaining a good position.
- c. Both the third and fourth runners must be willing to hold strong to their positions at the beginning of the exchange zone. They must also "make space" so as to not be pushed out of position.
- d. The third runner must attempt to set up the anchor runner for a good race position in which he or she can perform at their best.

- e. The anchor runner need not always be the fastest of the group, but rather the athlete who will run the best and most aggressive last leg. All four runners must be strategically placed and properly balanced in an effort to ultimately yield the finest TEAM result.

VII. PUTTING IT ALL TOGETHER

Now that you have been provided with the requisite "too kit", it is up to you - as the coach - to put the sprinting program together in your individual situation and in your particular environment to yield the best possible experiences and performances for all concerned. There are obviously many variations to any overall theme. No one way is the right way in all circumstances. What has been presented here is sound and can be used in various forms to meet the needs of your athletes and of yourself as sprint coach. Many additional and more detailed insights will be presented in "Putting It All Together" in Level II. In the meantime, remember to adhere to the following precepts, while striving to make sprinting a good experience for your athletes and fellow coaches. Have fun!

1. Work from general to specific.
2. Keep instructions clear and concise.
3. Work from simple to complex.
4. Drill only with a purpose in mind.
5. Listen to the athletes' feedback.
6. Train one technical aspect at a time.
7. Know your limitations in a hurry.
8. Work from similar to different.

APPENDIX

The following chart may prove useful in providing guidelines for when the various components of sprint training should be emphasized during the course of the annual plan.

GENERAL PREPARATION	SPECIAL PREPARATION	COMPETITION
<p style="text-align: center;">MAJOR EMPHASIS</p> General Endurance General Strength Flexibility Coordination	<p style="text-align: center;">MAJOR EMPHASIS</p> Specific Endurance Specific and General Strength Coordination Speed	<p style="text-align: center;">MAJOR EMPHASIS</p> Speed Specific Endurance Specific and General Strength Tactics
<p style="text-align: center;">Minor Emphasis</p> Speed	<p style="text-align: center;">Minor Emphasis</p> General Endurance Flexibility	<p style="text-align: center;">Minor Emphasis</p> General Endurance Flexibility Coordination

The chart below outlines the component distribution of a hypothetical microcycle for each of the main phases of the annual plan. This example should only be used as such and, therefore, not followed precisely without taking into consideration the factors unique to your particular coaching environment.

	GENERAL PREPARATION	SPECIAL PREPARATION	COMPETITION
MON.	General Endurance General Strength Flexibility	General Endurance General Strength Flexibility	General Strength General Endurance Flexibility
TUES.	Coordination Speed Flexibility	Speed Specific Strength Coordination	Speed Specific Endurance Tactics
WED.	General Endurance General Strength Flexibility	Specific Endurance General Strength Flexibility	Specific Strength General Endurance Flexibility
THURS.	Coordination Flexibility Speed	Coordination Speed	Light warmup
FRI.	General Endurance General Strength Flexibility	General Endurance Flexibility	Light Speed Coordination
SAT.	General Endurance Flexibility	General Strength Specific Strength	Competition
SUN.	Rest	Rest	General Endurance/Rest

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