

# **Speed Development for the Horizontal Jumper**

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Development of speed for the horizontal jumper is possibly the most important and most difficult task for the coach. In one sense, the development of speed is an extremely simple process. When simple guidelines are followed with patience, the program is typically successful. But, at the same time, it is an extremely complex process when we examine the number of variables involved and the intricate biomotor relationships that are prerequisite to success.

## **Balancing Biomotor Development**

Typically, when we think of a speed development program, we think of a series of training sessions that employ run training to achieve the desired objectives. The majority of this article will be devoted to discussion of planning these sessions. However, regardless of how well designed these may be, they will not be successful if these other abilities are not being trained and developed in a commensurate manner. Flexibility, mobility, strength, power, elasticity, and many other qualities have a direct bearing on an athlete's speed capabilities, and a speed development program that operates without a program designed to develop these other qualities is doomed to failure.

## **Speed Training and Run Training**

The speed development program should not be confused with the run training program. There are many run training activities that may be appropriate in the jumps training program that are not part of the speed development program. For the purposes of this article, we consider the speed development program to consist only of run training of various distances that is performed at maximal or near maximal intensities, in accordance with the general principles of speed development listed below. While other run training may be done to develop energy systems, for contrast training, or simply to prepare for a metabolic need associated with high level speed training, we do not consider this training as part of the speed training program. At the same time, there are many non-run training activities that could be considered part of the speed training program, but for the sake of space we will confine our discussion to the run training methods.

### **Constant Contact with Speed**

The jumps place a premium on speed development, and for this reason the jumper should constantly experience speed related activities in the training program. Speed must be included at all times in some manner that is safe and appropriate for that point in the training year. In addition, non-run training portions of the training program must employ activities that feature high speeds of movement as well.

## **General Principles of Speed Development**

Speed development becomes a simple matter when basic premises of speed development training are observed. First of all, the training of speed requires efforts of run training at or very near maximal intensities. Secondly, the training volumes and repetition distances attempted in speed training should be confined to that which can be performed at near maximal intensities. Attempting higher volumes or longer runs that result in a decrease in quality near the end of the session are detrimental. Finally, the recovery opportunity between these efforts must be long enough to insure high quality on succeeding efforts. No significant decrease in power output should be detectable over the course of a repetition, set, or session. A significant portion of the training program should be devoted to this high quality reduced volume-long recovery format. While energy system fitness needs must be addressed somehow in the jumps training program, the speed development program is not the time or place.

## **Speed Related Abilities**

There are three primary abilities we must train in the speed development program. These are acceleration, absolute speed, and speed development. Each of these must be recognized as a unique quality, to be trained separately at times and in combinations with others at other times. Discussion of each of these follows.

**Acceleration** is defined as the ability to move the body from rest. Typical humans require approximately 40 meters to accelerate to maximal velocity, so the 40 meter mark is generally considered to be the maximal distance employed in acceleration work.

**Absolute Speed** is defined as maximal velocity attainable. This quality should not be confused with acceleration. Absolute speed training activities involve attaining and maintaining maximal velocities for very short (less than three seconds) periods of time.

**Speed Endurance** is defined as the ability to maintain absolute speed. Once the body reaches its maximal velocity, deceleration inevitably occurs within a few seconds. Speed endurance refers to the ability to resist this erosion of absolute speed capabilities. This deceleration is not associated with poor energy system fitness, but results from loss of coordination at high speeds. Therefore, speed endurance should be considered as a specific type of coordination training. Speed endurance training activities involve attempting to maintain maximal velocities for more extended periods of time.

## **Phases and Phase Distribution**

There are three phases of the speed development program. These are (in chronological order) the Acceleration Development Phase, the Speed Development Phase, and the Speed Endurance Phase. The first two phases comprise the preseason training period, while the third may begin during the preseason training period, but often extends into the initial part of the competitive season.

Time should be equally divided between the three, and two months in each phase is ideal. However, if time does not permit, one month of each can produce great gains. If the length of the season does not permit even this, it is then best to spend at least one month in the earlier phases, ignoring the later one. When dealing with multisport athletes, it is possible at times to skip the Acceleration Development Phase if the previous sport is one that requires repeated acceleration (such as basketball, soccer, etc).

## **The Acceleration Development Phase**

The objective of this phase is to (1) develop an athlete's acceleration capabilities, (2) prepare and stimulate the neuromuscular system for more advanced, succeeding speed training, and (3) to provide a speed stimulus in the training program early in the training year when other forms of speed training might be deemed unsafe. This phase basically employs three sessions per week, as detailed below. These sessions are typically spaced out somewhat and organized according to the demands of the remainder of the week's training activities.

**Session 1: Acceleration Development Sprints.** This session employs typically 10-15 runs totaling 240-300 meters, comprised of distance ranging from 10-40 meters. These runs are done at maximal effort. Recoveries between runs need not be complete, but should be long enough to insure quality of work.

**Session 2: Speed Skill.** This session is comprised of lower intensity activities that enable the athlete to execute the mechanics of maximal velocity sprinting. This gives the athlete repetitions in executing these mechanics and the coach a chance to teach maximal velocity technical concepts in a safe manner. This session can consist of sprint development drills, submaximal buildups, or stadium runs (provided the stadium's construction permits an upright body posture and vertical pushoffs from each step).

**Session 3: Resisted Runs.** This session employs acceleration development sprints, with the use of some type of resistance device (sled, hills, etc). These runs should range from 30-50 meters in length, and should be done at maximal effort. Recoveries between runs need not be complete, but should be long enough to insure quality of work.

## **Speed Development Phase**

The objective of this phase is to develop an athlete's absolute speed capabilities. This phase basically employs three sessions per week, as detailed below. These sessions are typically spaced out somewhat and organized according to the demands of the remainder of the week's training activities.

**Session 1: Acceleration Development Sprints.** These are done in a similar fashion as in the previous phase. This session employs typically 9-12 runs totaling 240- 300 meters, comprised of distance ranging from 20-40 meters. They may be done from blocks. This session serves as a review of acceleration qualities, and provides added

neuromuscular stimulation in a safer format between the sessions discussed below.

**Session 2: Runway Rehearsal.** This session is comprised of actual rehearsal of the meet-length horizontal jump approach. Typically 6-10 repetitions are done. In addition to the obvious necessity of jumps technical practice, these are also done as a technical run session and touch lightly on the development of absolute speed.

**Session 3: Speed Development.** This session employs sprint-float-sprint efforts to accomplish true absolute speed development. A sprint-float-sprint is a run that features an aggressive acceleration to maximal velocity, then maintenance of maximal velocity for 0.5-1 second. The runner then performs a relaxed sprint of 20-30 meters at slightly less intensity, and concludes the effort with another maximal velocity phase of 2-3 seconds. Distances should be chosen and the efforts constructed to provide the two maximal velocity segments that correspond with the given timeframes. Typically the first sprint segments ends at the 45-50 meter mark, and the second sprint segment is 20-30 meters in length. When used in this phase, typical sprint-float-sprint sessions use 4-5 runs over a course of 90-100 meters. Recoveries between runs should be complete and long enough to insure quality of work.

## **Speed Endurance Phase**

The objective of this phase is to develop speed endurance qualities, specific coordination, and the freedom of movement needed to take off in the horizontal jumps at high velocities. Speed Endurance training is used to attain these

goals, while other qualities are being maintained using other methods.

**Session 1: Acceleration Development Sprints.** These are done in a similar fashion as in the previous phases, and for the same reasons. This session employs typically 8-12 runs totaling 200-250 meters, comprised of distance ranging from 20-40 meters.

**Session 2: Runway Rehearsal.** This session is done in a similar fashion and for the same reasons as in the previous phase. Typically 5-8 repetitions are done.

**Session 3: Speed Endurance.** This session employs high intensity run training in the 80-150 meter range to develop speed endurance capabilities. A typical session would include 3-6 runs with complete and extensive (5-8 minute) recoveries. Sprint-Float-Sprint constructs can be used for longer (120-150 meters) speed endurance efforts.

When the competitive season begins, it is difficult to accomplish these three sessions without creating overtraining situations. A good practice at this time is to combine sessions 2 and 3 into one session, with reduced volumes of each type of work. A typical session would involve 4-5 approach runs, followed by 2-3 speed endurance efforts.

## **Individualization of Training**

Individualization of training is not a convenience, but a necessity, and the above training structure can only be considered a general guide. Adjustments must be made in accordance to the athlete's training age and ability level.

These changes may take the form of adjustments in distances, volumes, recovery times, and densities. In addition, other components of the complete training program will have an effect on the success of the speed development program, so adjustments may need to be done according to the demands being placed on the athlete in those regards