



Gaining Ground

Development of speed in the horizontal jumper is one of the most important and difficult tasks that coaches face.

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In one sense, development of speed is an extremely simple process. When simple guidelines are patiently followed, the program will generally be successful. But in another sense, development of speed is an extremely complex process with a large number of variables and intricate biomotor relationships that are prerequisite to success.

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. Although the majority of this article will be devoted to planning these sessions, flexibility, mobility, strength, power, and elasticity also have a direct bearing on an athlete's speed capabilities. 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 but 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 intensity, in accordance with the general principles of speed development.

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 to be 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, our discussion will focus on run training methods.

CONSTANT CONTACT WITH SPEED

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 a manner that is safe and appropriate for that point in the training year. In addition, non-run training

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 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

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 longer 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, then it is best to spend at least one month in the earlier phases, ignoring the final one. When dealing with multi-sport athletes, it is possible at times to skip the Acceleration Development Phase if the previous sport is one that requires repeated acceleration.

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portions of the training program must employ activities that also feature high speeds of movement.

GENERAL PRINCIPLES OF SPEED DEVELOPMENT

Speed development becomes a simple matter when basic premises of speed development training are observed. First of all, training of speed requires efforts of run training at or very near maximal intensity. Secondly, training volumes and repetition distances attempted in speed training should be confined to that which can be performed at near maximal intensity.

Attempting higher volumes or longer runs that result in a decrease in quality near the end of the session is detrimental. Finally, the recovery opportunity between these efforts must be long enough to ensure high quality on successive efforts.

and in combination with others.

Acceleration is defined as the ability to move the body from rest. Humans typically require approximately 40 meters to accelerate to maximal velocity, so that 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

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 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 and organized according to the demands of the remainder of the week's training activities.

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

Session 2: Speed Skill. This session comprises lower intensity activities

that enable athletes 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, for example, sleds or hills. These runs should range from 30 to 50 meters in length and should be done at maximal effort. Recoveries between runs need not be complete, but should be long enough to ensure quality of work.

SPEED DEVELOPMENT PHASE

The objective of this phase is to develop an athlete's absolute speed capabilities. This phase employs three sessions per week, as detailed below. These sessions are typically spaced out 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 to the previous phase. This session employs typically 9 to 12 runs totaling 240 to 300 meters, comprising distances from 20 to 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 comprises actual rehearsal of the meet-length horizontal jump approach. Typically 6 to 10 repetitions are done. In addition to the obvious necessity of 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 to 1 second. The runner then performs a relaxed sprint of 20 to 30 meters at slightly less intensity, and concludes the effort with another

maximal velocity phase of 2 to 3 seconds. Distances should be chosen and efforts constructed to provide the two maximal velocity segments that correspond with the given timeframes. Typically the first sprint segment ends at the 45 to 50 meter mark, and the second sprint segment is 20 to 30 meters in length. When used in this phase,

The three sessions of the speed development phase are typically spaced out and organized according to the demands of the remainder of the week's training activities.

typical sprint-float-sprint sessions use 4 to 5 runs over a course of 90 to 100 meters. Recoveries between runs should be complete and long enough to ensure 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 to the previous phases, and for the same reasons. This session typically employs 8 to 12 runs totaling 200 to 250 meters, comprising distances from 20 to 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 to 8 repetitions are done.

Session 3: Speed Endurance. This session employs high intensity run training in the 80 to 150 meter range to develop speed endurance capabilities. A typical session include 3 to 6 runs with complete and extensive (5 to 8 minute) recoveries. Sprint-float-sprint

constructs can be used for longer (120 to 150 meters) speed endurance efforts.

When the competitive season begins, it is difficult to accomplish these three sessions without overtraining athletes. 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

to 5 approach runs, followed by 2 to 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 with 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 made according to the demands being placed on the athlete in those areas. ★

Boo Schexnayder served as the jumps and combined events coach at Louisiana State University from 1995–2007. Schexnayder is widely regarded as one of the nation's top field event coaches and was recently named to the 2008 US Olympic team as an assistant coach. Under his guidance, Walter Davis claimed both the indoor and outdoor world championship in the triple jump and John Moffitt claimed the silver medal at the 2004 Olympic Games in Athens.