

PREDICTING PERFORMANCES OF YOUNG ATHLETES

By Gerd Schroter and Gerald Voss

Predicting the performance potential of young athletes in order to guide them to the most suitable event can be a complicated task. In the following text the authors, formerly of the German Democratic Republic, make some simple suggestions of test procedures that will be helpful in talent identification. The article is a translated condensed summary from two contributions that appeared in Die Lehre der Leichtathletik, Helmar Homel, editor, Vol 29, No. 40, 1990. Reprinted with permission from Modern Athlete and Coach.

PERFORMANCE PREDICTIONS

By Gerd Schroter

The Institute for Track and Field at the Sporthochschule Leipzig has since the middle of 1970's been involved in systematic research into the problems of the development of young athletes. The results have provided guidelines for a continuous control over training loads in the basic training phases, as well as methodical control norms for conditioning and technique development (particularly for speed and power development).

We will now attempt to adjust the scientific research results and our experiences to the new conditions (German unification — editor).

This means the finding of relatively more complex and, above all, practical procedures suitable for the comparatively restricted conditions in the development of young athletes. A preferable approach in our view appears to be the establishment of a performance testing and evaluation system, that has already been developed in the German Democratic Republic and partly employed in the athletic clubs.

This system, based on a relatively simple and not very demanding performance diagnostics allows to establish a profile to discover, categorize and evaluate young athletes. The profile is most suitable for the 10 to 15 yrs. age range. It allows evaluating athletic ability in a wider sense, as well as the inclination towards a certain event group (Test battery 1 in comparison to test batteries 2 to 4). The specialist event group evaluations are recommended for young athletes over 13 yrs. It is presented for the jumping events in the following article by Voss.

TEST BATTERIES

1. Complex track and field evaluation:

- Complex sprint test
- Crouch start test
- Long jump
- Frontal crouched high jump
- Shot put with extremely light implements
- Tests to determine elementary cyclic and acyclic speed potential (from the neuromuscular viewpoint)
- Endurance test.

2. Sprint performance evaluation:

- Complex sprint test
- Crouch start test
- Tests to determine elementary cyclic and acyclic speed potential
- Strength test (hip extensors and hip flexors).

3. Jumping performance evaluation:

- Rebound jump test
- Sprint test
- Long jump
- Frontal crouched high jump
- Five-step bounding.

4. Running performance evaluation:

- Complex sprint test
- Tests to determine elementary cyclic and acyclic speed potential
- Endurance test (200m, 400m, 3000m gradual load test).

It is obvious that emphasis in our evaluations is based on a relatively elementary determination of the performance potential. This, in turn, allows us to make predictions on the inclination towards a particular group of events, as well as to make general and specific suggestions to guide the planning of the training loads.

For further research and talent identification we hope to introduce the so called “test festivals” for young athletes. These test festivals will allow us to evaluate and improve the present test batteries. Further improvement can be expected from an enlarged performance test and an evaluation system that will include detailed technique evaluations for all events.

MULTIPLE JUMPING EVENTS TEST

By Gerald Voss

The emphasis on winning and record breaking performances has in the last years been responsible for training measures that neglect the basic aims in the development of young athletes — technique learning and the improvement of speed. It is often forgotten that it will be virtually impossible to make up in future for the shortcomings of these capacities. Shortcomings in the speed potential and technique cannot be compensated for in the high performance range. In addition, excellent performances of young athletes are often based on a wrong assumption about their potential, leading to false predictions.

A comprehensive evaluation of individual differences in the development of single performance capacities is only possible with the help of sophisticated technical equipment, something that is not readily available in average athletic clubs or schools. This was the reason for the development of a multiple test battery for jumping events that will provide information on the essential prerequisites. These tests will take place during the test festivals at well equipped major training centers.

The basic training of young athletes is expected to be many-sided before training for a specific event is introduced. As early specialization is to be avoided, it was decided to use for the jumping events a multiple test, although jump parts of the test battery involved a specific jumping event. The aim was to collect information for the long jump, the high jump and a multiple jump (the triple jump or a training means). In all cases we are interested in:

- The performance.
- The cyclic speed performance (running speed or run-up speed), important in all jumping events.
- The acyclic speed (the takeoff speed — the takeoff duration).
- A necessary performance potential for jumping events that must be developed at a young age.

- The exploitation of maximal speed in the run-up and the ability to convert it to the jumping performance as an indicator of an effective technique.

THE TESTS

The multiple jumping test is made up from the following:

1. Rebound high jump from a height of 40cm, emphasizing a fast takeoff. The support and flight phases are timed (3 attempts).
2. A 60m sprint from a standing start in which the performance over the flying 30m is recorded (1 attempt).
3. Long jump from a competition run-up (2 attempts).
4. Frontal crouched high jump facing the bar. Athletes select their own heights (3 attempts, including failures).
5. Five-step bounding from a 7-stride run-up (2 attempts).

The run-up speeds and the takeoff times are recorded in the jumping tests (3 to 5). All speed and time measurements are recorded electronically, using a light beam. The duration of the takeoff is recorded from a pressure plate, placed under a synthetic mat. The evaluation of the results is based on the best attempt in all the tests, the total evaluation on the sum of the points for the following parameters.

- Performance: the efficiency coefficient of the takeoff, calculated from the support and flight times, the effective value of the long jump, the height in the frontal crouch high jump and the distance of the 5-step bounding test.
- Cyclic speed: 30m flying, run-up speeds in the long jump and the 5-step bounding.
- Acyclic speed: takeoff times in the rebound high jump, the long jump, the frontal crouch high jump and the average in the 5-step bounding.
- Conversion level: the percentage of the run-up speed in the long jump and the 5-step bounding from the speed achieved in the 30m flying sprint.

INTERPRETATION OF TESTS

The results are calculated from scoring tables, as well as placing in the various tests. The scoring tables are based on the following individual values:

1. The rebound jump: support time, flight time, height.
2. The 60m sprint: time and velocity of the flying 30m section.

3. The long jump: competition distance, effective distance (measured from the actual takeoff), theoretical distance (provided a valid correlation between the run-up speed and the distance jumped has been established), run-up time and velocity (6.0m to 1.0m before the takeoff), takeoff time, conversion level.
4. The frontal high jump: competition height, theoretical height (as in the long jump), run-up time and velocity (4.5m to 2.0m before the takeoff), takeoff time, conversion level.
5. The five-step bounding: distance jumped, theoretical distance (as in the long jump), run-up time and velocity (3.5 to 1.0m before the takeoff), distances for each phase, takeoff times for each phase, flight times for each phase, average velocities for each phase.

The points scored allow for a long-term intra-individual comparison, the placings indicate the actual performance in a competitive situation of the tests. This allows to evaluate the athletes strength and weaknesses in a simple comparison with other participants. For example:

- Total evaluation — place 3
- Performance — place 2
- Cyclic speed — place 5
- Acyclic speed — place 3
- Conversion level place 2
- Jumping ability place 1

The athlete in the above example has shortcomings in the cyclic speed although he achieves good overall results (high conversion level from this speed). It appears therefore that sprinting speed should receive priority in his training program.