THE IMPORTANCE OF THE BASIC TRAINING FOR THE DEVELOPMENT OF PERFORMANCE

Hans-Peter Thumm

"The Author here underlines the fact that top level results cannot be achieved and, most of all, maintained, without a long-term training programme aimed at the improvement of the general performance capacity of the athlete. He then describes in detail the basic elements that should be included in such training programmes."
newly introduced competition systems for children and youths have been totally reworked, or special championships (e.g. in the FRG) have been abolished altogether.

Top-level sport in general and the athletic success of industrial nations are logical products of an achievement-maximizing, mechanised society. Although numerous nations belonging to other cultural areas have at their disposal the same motor potential, they do not have such a complete net of school-sport and top-level sport-related concepts.

In these nations the dominant method of finding, registering, and promoting individual talents is by chance. A fixed system or the specific application of the most simple training methods cannot generally be taken for granted.

The developing countries in particular run the risk of transferring training concepts, training methods, and the resulting technologies to their own socio-cultural situation without having prepared the ground for them. Quick success is often thought to be more important than the careful laying of the foundations of a long-term training process.

The following contribution should therefore not be understood as a patent remedy, but as a piece of practical information.

Certain basic principles will be made clear, and coaches should extract those elements which can be translated into action in their respective situation.

2. The basic training as a part of the long-term training process

Athletic training theory has known a sensible structure of performance development for decades. With its classical three-step-system it has worked out a long-term framework which should be exclusively oriented to the individual psychosomatic development of the athlete from childhood to adulthood! The age ranges given in the following "long-term structure of training" are therefore only rough points of orientation. The responsible coach should, in any case, act according to biological characteristics instead of to calendaric data. Although the following principle is often neglected, it is still valid:

It is not the programme which determines the training process, but the development of the child or youth!
2.1 The long-term structure of training

<table>
<thead>
<tr>
<th>Phase</th>
<th>Duration</th>
<th>Age</th>
<th>Goals and characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Basic training</td>
<td>4-5 years</td>
<td>9-14</td>
<td>Making of general movements experiences - dominance of many-sidedness - general sport-motor goals, acquisition of the rough structure of many or all athletic movements</td>
</tr>
<tr>
<td>II. Build-up training</td>
<td>3-4 years</td>
<td>15-18</td>
<td>Introduction of the suitable competitive event, improvement of the movement techniques, at least rough differentiation into sprint, middle and long distance events, throwing events, jumping events, or multiple events</td>
</tr>
<tr>
<td>III. Top-level training</td>
<td>6-10 years</td>
<td>19</td>
<td>Mastering of the technically finest form in changing situations, realization of the conditional, coordinative and psychological potential</td>
</tr>
</tbody>
</table>

2.2 Basic elements of the training process

The long-term build-up consists of elementary constituents which are repeated in every phase. Their form of appearance, however, varies (e.g. strength appears as strength endurance, speed-strength, and maximal strength) and, as regards volume and intensity, must be suited to the dominant biological situation.

These “basic elements” are part of every movement. Depending on the respective event, different elements are particularly dominant (e.g. in the shot put the strength factor is extremely important).
3. General basic training

The avowed goal of the long-term training process is the achievement of the personal best performance during the top-performance phase.

The structure of the entire process is therefore similar to a pyramid: from a broad, many-sided basic training to a top performance in a certain event. Without a solid basic training or the improvement of the general performance capacity, top-level goals can hardly be achieved or even stabilized today.

As will be seen in chapter 3.1, the advantages of a many-sided basic training are not only within the field of coordinative capacities. The athlete who has undergone a many-sided and thorough basic training phase is later less susceptible to injuries, he can better tolerate high training loads and is highly motivated.

At the beginning of the many-sided basic programme the coach must inform himself about the central importance of two closely connected aspects, which positively or negatively influence the practical success:

a) a knowledge of all stages of development of a child into an adult and their sensori-motor characteristics;

b) the importance of the communication between coach and athlete within the learning process (in this case: the acquisition and improvement of the coordinative capacities and abilities).

Before giving statements on and proposals for practice these two points are dealt with.

3.1 The main goal of the basic training: the development of the coordinative capacities

Coaches who are not only interested in top-level athletes, but who also deal with the problems of youth training confirm the scientists' statement that the developmental stages before puberty are best suited for movement learning.

Between the ages of 8 and 10, children have at their disposal a high natural capacity for learning and taking things in besides a pronounced mobility and motivation. In this relatively harmonious developmental phase, the organism is more suited for coordinative processes than for certain conditional loads.

The training contents for the beginner must be suited to these natural preconditions. The acquisition of many movement experiences is most important. Elements of non-athletic kinds of sport must also be integrated into the training (primarily floor exercises and apparatus gymnastics, sport games). In order to find the right mixture, a further subdivision of the basic training may be useful. Although the loading should be progressive, it should also be slow in order to stabilize certain learning stages.

This means for the coach: in no later developmental phase can the rough form of a movement be acquired faster than between the ages of 8 and 12.

The reason for this is the almost completely finished development of the neuromuscular system and the intelligence. The results of numerous neuro-psychological and psychological investigations are intentionally not presented here.

Hand in hand with this "inner maturation" goes an improvement of the motor capacity to cope even with complex movement tasks. This becomes particularly obvious with the capacity of quick adjustment or adaptation
(inner differentiation capacity), before plainly recognizable processes of inhibition set in which are caused by the sex-specific changes during puberty.

The organism - supported by a permanently high performance willingness - is therefore capable of coping with a great amount of stimuli and of storing the appropriate response patterns in the responsible areas of the brain (cerebrum, cerebellum). A complex explanation of the regulation and control mechanisms is not given here either.

The quantity (amount of acquired movements) and the quality (acquired movement precision) make it possible for the child to establish various movement connections and to react successfully to corrections even at an early age. The precision of the stored information depends very much on the didactic-methodical arrangement of the training contents by the coach. An outward sign of the fact that the learning steps do not correspond with the developmental situation of the child (mental or physical overloads) is a poor movement structure. Only the wide selection and combination of basic motor patterns ("basic elements") provides the athlete with the optimal basis for coping with difficult movement-technical details in the later building-up and top-level training, for automatizing movements or realising them in varying competitive situations.

In particular, the coaches of those countries where there is no track and field tradition concentrate on only a few movement patterns at early developmental stages. Although the first result is a quick improvement in performance, the achieved performances can be stabilized but hardly further developed to top-level performances. Because of the lack of a variable motor system and of numerous "basic elements", complex movement sequences cannot be mastered. Corrections and improvements are only possible via time-consuming repetitions.

Short-term stagnations do occur even during the sensitive phases. However these are not real stagnations, but only "learning plateaus" which are caused mostly by leaps in the physical and psychological development, or by the too rapid carrying-out of certain learning steps.

The reasons for basic training would not be complete without mention of a general problem: human motor behaviour is strongly influenced by the environment. Many years of personal experience show that different cultural areas not only determine everyday behaviour, but also bring about very different repertoires of basic motor patterns. Traditional movement patterns (different games, dances, contents of movement education in schools, etc.) a different learning mentality, the lack of sport facilities and equipment, as well as physical (anthropogenous) differences have to be taken into account if the "basic training" is to be introduced all over the world.

3.2 The relationship between the coach and the athlete in the learning process

Whether the learning process and the training are finally successful is not only determined by the right age-specific training contents, but also by the fruitful relationship between the athlete and the coach.

For this some prerequisites are indis-
pensable, which can easily be presented in a table.

The demand profile of both coach and athlete is of course characterized by a development and dynamics of its own. Three aspects deserve particular attention:

a) \textit{The language of the coach}

According to the available learning-psychological and learning-physiological knowledge, the quality of the stored information is determined by the relation to practice, precision and age-suitability, as well as the transparency and expressiveness of the coach's language. If movements are repeated or executed in competitive situations, the coach's language helps the athlete to a more concrete idea (anticipation) of the respective movement.

b) \textit{Mutual communication}

Every executed movement in training and competition has to be assessed from a learning-theoretical point of view; i.e. comparison between required value and actual value. This can fertilize the further learning process if the athlete is given the opportunity to
reflect on and to express the psycho-physical sensations he has while executing a certain movement early enough. Internal information and external assessment by the coach often determine the further course of actions (methodical steps) or corrective advice.

With this kind of communication, the athletes are prompted to mental collaboration, which helps them later to control and regulate their own actions in the phase of top-level performance.

**c) Necessity for competitions**

The assessment of the learning process by the coach is in the long run often not enough for children and youths. Their motivation for training and learning is mainly stabilized by successes – sometimes also by failures – in comparison with children of the same age.

Apart from the many-sided motor training, 9 to 12-year-old children must regularly take part in competitions. These competitions do not have to be arranged systematically or even be parts of a genuine periodization. On the contrary, in order to keep a constant level of motivation, competitions have to be distributed over the whole year. It is useful, however, to fit them into the rhythm of the school year (taking account of the holidays).

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One of the women's middle distance races at the first World Junior Championships in Athens
### 3.3 Proposal for a basic training programme (9-14 years)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Number of training sessions per week</th>
<th>Coordinative capacities</th>
<th>Conditional capacities</th>
<th>Main psychological goals</th>
</tr>
</thead>
</table>
| 1st step   | 2                                    | Improvement of agility (gross motor activity) and skill fullness basic running and hurdling rhythms, many-sided jumping training (long jump: squat jump and step jump, multiple jump). | Strength: general strengthening by strength-endurance training, loading with one's own body weight.  
Endurance: general aerobic long-duration endurance (relative).  
Speed: focus on the reaction phase, maximal-cyclical loading. | Stimulation of learning motivation, first integration into training group, preparation of a favourable basis for interaction. |
| (9/10 years)|                                      |                                                                                        |                                                                                                                                                                                                                           |                                                                                                                |
| 2nd step   | 2-3                                  | Rough form of sprinting, hurdling, stride long jump and ball throw with shortened approach run.  
Preparation of high jump (only flop style), pole vault and javelin throw (special length). | Strength: general strengthening by circuit training (fixed apparatus), improvement of strength endurance, loading still with one's own body weight.  
Endurance: progressive increase in the general aerobic capacity.  
Speed: improvement of the reaction capacity, beginning with acceleration training, increase in maximal stride rate. | Increase in motivation, optimisation of the learning process, learning of social behaviour, first personality diagnosis, observation of the family environment. |
| (11/12 years)|                                    |                                                                                        |                                                                                                                                                                                                                           |                                                                                                                |
| 3rd step   | 3                                    | Rough form of high jump (flop style), pole vault, and javelin throw.  
Fine form of sprinting, hurdling, ball throw with approach run, hang style and stride jump.  
Preparation of hitch-kick style, discus throw, and shot put. | Strength: general strengthening by circuit training, improvement of strength endurance, loading with unchangeable external weights.  
Endurance: improvement of the general aerobic capacity, 25% of training time for the build-up of anaerobic short-duration endurance.  
Speed: all 4 phases: reaction capacity, acceleration capacity, maximal cyclical speed, speed-strength endurance. | Maintenance of motivation, regulation of motivation (assessment), transition to social-integrative style, first psycho-prophylaxis, load controls, concentration and motivation tests. |
| (13/14 years)|                                    |                                                                                        |                                                                                                                                                                                                                           |                                                                                                                |
3.4 A practical example of a training session with 9 to 10-year-old girls  (1st step of the basic training)

**Topic of the training session:** The development of the three-step basic hurdling rhythm

**Age group:** 9-10 years  
**Sex:** girls  
**Duration of the training session:** circa 80-85 minutes  
**Place:** common school gym  
**Number:** 12

<table>
<thead>
<tr>
<th>Part/duration</th>
<th>Sequence of exercise forms/sketches</th>
<th>Number of repetitions</th>
<th>Part goals/corrective advice</th>
<th>Organization form/apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warming-up (circa 25 min.)</td>
<td>1. “Band-catching” - catching game for the whole training group.</td>
<td>2 - 3</td>
<td>Rules: One “hunter” tries to rob 11 “hares” of their bands. Every “hare” without a band becomes an additional “hunter”. The last “hare” becomes the “hunter” in the next round of the game.</td>
<td>11 coloured bands; playing-field: the whole gym.</td>
</tr>
<tr>
<td></td>
<td>2. Stretching exercises with gymnastic sticks. Selection of exercises:</td>
<td>Circa 10-12 repetitions of each exercise</td>
<td>General stretching of all main muscle groups. Partly as training of coordinative capacities.</td>
<td>12 gymnastic sticks; the athletes can freely distribute themselves in the whole gym.</td>
</tr>
</tbody>
</table>
### Part/duration | Sequence of exercise forms/sketches | Number of repetitions | Part goals/corrective advice | Organization form/apparatus
--- | --- | --- | --- | ---
**Main part** (circa 40 min) | Sketch: | | | |
| **Sketch:** | | | | |

1. **Simple row of medicine balls**
   a) Free running over the balls. 6
   b) Running over the balls with a three-step-rhythm. 10
      The lead-leg should be changed with each new round.
   c) Running over the balls with a three-step-rhythm. 10
      The lead-leg is not changed.

Suiting of the coordination to the space
- 2 of rows medicine balls with 5 balls each. The balls are placed on tennis rings. Distance between the balls: 6.50 - 7 m.

Both-sided training as a principle.
- Run only on the balls of the feet!
- The path of the tips of the feet runs exactly over the centre of the ball!

At a speed of 70-75% of the maximum: Hurdling is sprinting!
- Touch the ground behind the ball as soon as possible!

Distance between the balls: 7.20 - 7.50 m.
2. Running over “stick-hurdles”

a) Running over the low obstacles ("stick-hurdles") with a three-step-rhythm. The lead-leg should be changed with each new round.

b) Running over the “stick-hurdles” with a three-step-rhythm. The lead-leg is not changed.

c) Running over the “stick-hurdles” with a three-step-rhythm. The lead-leg is not changed and steps into the hoop.

Sketch:

Obstacle relays as competition

Rules:
Start at the starting line – running over the “stick-hurdles” with a three-step-rhythm. Running around the turning mark and back again over the same obstacles. The next runner is sent into the race by a clap with the hand or by transferring a baton.

Application of what has been learned in competition. Increase in the girls’ motivation for hurdling.

Concluding part (circa 10 - 12 min)

Running for the first time over an obstacle which is similar to a hurdle.
— Do not jump, sprint!
— Touch the ground immediately behind the ball with the ball of the foot!
The lead-leg should step into the hoop from above.
— The foot should not “fly” over the hoop.

2 rows with 4 pairs of balls each, a gymnastic stick being placed on each of the ball pairs. Distance 7 m.
Gymnastic hoops as direction regulators behind the obstacles.

Fixing of a starting line and two turning marks (running distance: 40 m (single)). The “stick hurdles” can be left standing. 2 relay teams of 6 girls each are formed.
4. Training of the conditional factors

As has already been mentioned, the sensori-motor learning process is the centre of the basic training. Through numerous repetitions, which are typical of sensori-motor learning, a good conditional effects is achieved. The biological characteristics determine at what developmental stages additional purely conditional loads should be used.

In the following part the characteristics of the age-specific training of flexibility, speed, endurance, and strength are outlined. This is particularly important because many coaches still use exercise forms and training loads for adults in the basic training.

4.1 Flexibility

It is clear that for prophylactic reasons alone this factor must be a constant part of the daily training routine. The flexibility of the joints, the elasticity of the tendon, ligament and muscle system can be brought about by active tasks (the athlete himself chooses the intensity), or “passive” procedures (the intensity is regulated by a partner or by special apparatus). In this context, the physiologically favourable sequence of warming-up exercises, loosening exercises, general and specific stretching and strengthening exercises is very important.

4.2 Speed

When the neuro-muscular system is fully developed, the limits of the natural reaction capacity are also almost determined. 9 to 12-year-old children have therefore at their disposal a high intra-muscular capacity (combination of nervous and muscle system), which finds expression in the capacity for increasing the stride rate in sprinting. The increase in basic speed is sometimes enormous and the feel for rhythmical running is very noticeable (=> introduction of hurdling). An essential improvement in the acceleration phase can still not be expected for lack of maximal leg strength. This, however, can be partly achieved through an increase in coordinative training. Although the aerobic short-duration endurance (speed endurance) can be trained, the training load should be low for reasons of metabolism. The improvement of speed has priority in spite of a high correlation with the strength factor.

4.3 Endurance

Many investigations show independently of each other a significant increase in the absolute weight of the heart between the ages of 9 and 12/13. Because of an additional increase in the capillarisation, there is a change in the peripheral resistance and with that in the complete hemodynamics.

The by now bigger heart volume and stroke volume stimulate the oxidative metabolism. The result of this is a significant improvement in the general endurance with loads of about 140 heart beats/min.

Because of the still existing build-up metabolism, the enzymatic production within the aerobic glycolysis is not stimulated very much.

An outward sign of these processes is the faster regeneration of the cardiocirculatory system at this age. The metabolism itself, however, needs a longer time for regeneration.

The prerequisites for the general aerobic endurance training are consequently very favourable. Loads which primarily depend on the aerobic
energy supply should be applied only in the following years.

Practical experiences show that with endurance training there is the possibility of injuries and lesions of the tendon and ligament system. For this reason 80% of the training with beginners should be done off the track. Forest soil and lawns are a marvellous alternative.

4.4 Strength

Within the framework of the natural total development, there can be noticed a relatively high increase in the strength factor between the ages of 7/8 and 11/12. In the past this finding led many coaches to begin systematic strength training too early.

For this reason strength training with children and youths was also the central point of discussion for all experts since nowhere else does the young athlete run a greater risk of injuries than in strength training! From the multitude of important advice for strength training with children and youths the following deserve particular attention:

a) In spite of the mentioned increase in strength, the support and ligament system of 9 to 12-year-old children does not allow loading with external weights.

b) The natural development, however, can be excellently supported with a general strengthening.

c) The loads should lead to a harmonious development of all muscle groups.

d) Maximal loads should not be applied because the fast-growing bones and the growth zones (joints between the epiphyses) in particular are sensitive to loads and susceptible to injuries.

e) Specific forms of speed-strength or explosive-strength training (e.g. plyometric jumps) as well as the lifting of weights over shoulder height should be avoided during puberty.

f) The only factor of strength which should be systematically trained during the basic training is strength endurance. The central muscle groups of the belly and the back should be developed first.

g) For injury-prophylactic reasons not only the agonists, but also the antagonists should be trained early (highest share of muscle injuries).

Until the beginning of puberty, there is no difference between boys and girls as far as the development of strength is concerned. During and after puberty, the highest increase in muscle mass can be noticed. The reason for this is the increasing release of anabolic hormones. Only when the growth in height has come to an end, can one begin with a systematic maximal strength training (unless there are abnormal positions of the joints).

Perhaps the following practical remarks on the strength factor can help to approach the beginning of strength training within the basic training as carefully as possible.

4.4.1 Principles of the long-term build-up of strength

From these principles (illustrated in the table on the following page) a specific structure of the strength factor which is suitable for the respective age-group can be deduced without running the risk of damaging the passive or active locomotor system. Strength training is possible at every age if it is oriented solely to the individual somatic conditions.
4.4.2 Guidelines for strength training with 9 to 17-year-old children and youths

See table on the following page.

4.4.3 Exemplary strength training exercises for boys

Age: 14-15 years.

Goal: General strength training (all main muscle groups).

Load: Standardised external weights.

Sequence: Legs - belly - chest/arms - back.

Volume: Speed strength = 8-10 repetitions.

1. Standing two-legged jumps with weight jacket onto a low box.

2. Hanging from a wall bar, pulling up of a sandbag (5 kg) with both feet.

3. Bench pressing: lying on the back on the bench, holding a loaded bar on the chest; lifting of the bar vertically upwards until both arms are completely extendend (Mind your breathing technique!).
### Guidelines for strength training with 9 to 17 year old children and youths

<table>
<thead>
<tr>
<th>Step</th>
<th>Age</th>
<th>Goal</th>
<th>Manifestation of the strength factor</th>
<th>Number of repetitions per exercise</th>
<th>Load</th>
<th>Time per week</th>
<th>Possible organization form</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Girls/boys 9-11 years</td>
<td>General strengthening of all muscle groups</td>
<td>- Strength endurance 80%</td>
<td>SE: 12-15</td>
<td>Own body weight</td>
<td>2x20 min</td>
<td>General circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Speed strength 20%</td>
<td>SS: 8-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIA</td>
<td>Boys 12-14 years</td>
<td>General strength training</td>
<td>- Strength endurance 70%</td>
<td>SE: 14-20</td>
<td>a) Own body weight</td>
<td>2x30 min</td>
<td>General circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Speed strength 30%</td>
<td>SS: 8-10</td>
<td>b) Unchangeable light external weights (alternately)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIB</td>
<td>Girls 12-13 years</td>
<td>General strengthening</td>
<td>- Strength endurance 75%</td>
<td>SE: 12-15</td>
<td>Own body weight</td>
<td>3x20 min</td>
<td>General circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Speed strength 25%</td>
<td>SS: 8-10</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>IIIA</td>
<td>Boys 15-17 years</td>
<td>General strength training</td>
<td>- Strength endurance 50%</td>
<td>SE: 15-25</td>
<td>a) Standardised external weight</td>
<td>3x30 min</td>
<td>General circuit, specific station training</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Speed strength 35%</td>
<td>SS: 10-12</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Build-up of maximal strength 15%</td>
<td>SMS: 4-6</td>
<td>b) Changeable weight (e.g. loaded bar)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(also learning of techniques)</td>
<td>(submaximal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIIB</td>
<td>Girls 14-16 years</td>
<td>General strength training</td>
<td>- Strength endurance 50%</td>
<td>SE: 15-20</td>
<td>Unchangeable external weights</td>
<td>3x30 min</td>
<td>General circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Speed strength 50%</td>
<td>SS: 8-12</td>
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</tbody>
</table>
4. Lying on a high box, trunk raising forward and upward with a medicine ball (2 kg).

5. Half squat: learning of the technique with a loaded bar (20 kg), control by a bench (Do not sit down, touch the bench only lightly!).

6. On a sloping bench, trunk raising forward and upward over the legs with a weight (2.5 kg) on the neck.

7. Lying on a high box, raising of the extended legs up to the horizontal with a medicine ball (2 kg).

8. With the take-off foot placed on a low box, vigorous upward rising of the free leg (necessary for all jumps); learning of the technique with a loaded bar (20 kg).

9. Two-armed snatch: learning of the lifting techniques, the bar being placed on a low box.
10. Complex exercise: squat jumps with two weights (2.5 kg each).

5. An example from practice

The whole theoretical construction and reflection is useless if it is not put into practice. Only the daily training process shows whether the conceived contents are indeed age-specific, or whether the realization fails because of the incompetence of the coach. Unfortunately a lot of theoretical approaches are never put into practice. In the following table the performance development of Edith Oker is presented. I was fortunate in being responsible for the planning, regulation, and control of Edith Oker’s training process for 9 years. During this whole period, I always closely followed the principles explained above.

(The table that concludes this article is on the following page).
<table>
<thead>
<tr>
<th>Year</th>
<th>Age</th>
<th>Many-sidedness/events</th>
<th>Specific development of inclinations</th>
<th>Number of training sessions per week</th>
<th>Most important successes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>10</td>
<td>Basic training 75m-run, long jump, ball throw (80 g)</td>
<td>Long jump 4.30 m</td>
<td>Summer: 1</td>
<td>Without training plan</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Sprint 75 m: 10.4</td>
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</tr>
<tr>
<td>1972</td>
<td>11</td>
<td>75m-run, 600m-run long jump, high jump, ball throw (80 g)</td>
<td>Hurdles 4.81 m</td>
<td>Summer/winter: 2</td>
<td></td>
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<td></td>
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<tr>
<td>1973</td>
<td>12</td>
<td>75m-run, 100m-run, cross-country-running, long jump, high jump, shot put (3 kg), ball throw (80 g)</td>
<td>Long jump 5.42 m</td>
<td>Summer/winter: 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sprint 75 m: 9.7</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>1974</td>
<td>13</td>
<td>100m-run, general endurance, 80m-hurdles, high jump, long jump, shot put (3 kg)</td>
<td>Long jump 5.75 m</td>
<td>Winter: 3</td>
<td>German long jump champion (colts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sprint 100 m: 12.2</td>
<td>Winter: 2</td>
<td></td>
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<tr>
<td>1975</td>
<td>14</td>
<td>100m-run, general endurance, 80m-hurdles, high jump, long jump, shot put (3 kg)</td>
<td>Long jump 5.89 m</td>
<td>Winter: 3</td>
<td>German 80m-hurdles champion (colts)</td>
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<td></td>
<td></td>
<td></td>
<td>Sprint 100 m: 12.0</td>
<td>Winter: 3</td>
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<tr>
<td>1976</td>
<td>15</td>
<td>100m-run, general endurance, 100m-hurdles, long jump, high jump, shot put (4 kg)</td>
<td>Long jump 6.27 m</td>
<td>Winter: 3</td>
<td>2nd place 50m hurdles German Indoor Championships (youth)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sprint 100 m: 11.8</td>
<td>Winter: 3</td>
<td>2nd place long jump German Indoor Championships (youth)</td>
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<tr>
<td>1977</td>
<td>16</td>
<td>Build-up training 100m-run, 200m-run, general endurance, high jump, long jump, shot put (4 kg)</td>
<td>Only three test results, no other competitions</td>
<td>Winter: 4</td>
<td>Improvement in the conditional fundamentals</td>
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<td>Summer: 4</td>
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<tr>
<td>1978</td>
<td>17</td>
<td>100m-run, 200m-run, 100m-hurdles, long jump</td>
<td>6.41 m</td>
<td>Winter: 5</td>
<td>German 100m-hurdles champion (youth)</td>
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<td></td>
<td></td>
<td></td>
<td>100 m: 11.7</td>
<td>Winter: 5</td>
<td>2nd place long jump German Championships (women)</td>
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<tr>
<td>1979</td>
<td>18</td>
<td>100m-run, 200m-run, 100m-hurdles</td>
<td>6.46</td>
<td>Winter: 5</td>
<td>German 60m-hurdles indoor champion (youth)</td>
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<tr>
<td></td>
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<td>100 m: 11.7</td>
<td>Winter: 5</td>
<td>2 bronze medals at the European Junior Championships</td>
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<tr>
<td>1980</td>
<td>19</td>
<td>High-performance phase 100m-run, 200m-run, 100m-hurdles</td>
<td>6.46</td>
<td>Winter: 6</td>
<td>2nd place 100m hurdles German Championships (women)</td>
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<td></td>
<td></td>
<td>100 m: 11.7</td>
<td>Winter: 6</td>
<td>2nd place 100m hurdles German Championships (women)</td>
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<td>200 m: 24.4</td>
<td>Winter: 6</td>
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