

STRENGTH TRAINING FOR WOMEN JAVELIN THROWERS

By Ruth Fuchs

Former world record holder and double Olympic gold medalist, Ruth Fuchs, discusses select aspects of strength training for women javelin throwers, based on her own experiences over many years of training. The article is a slightly edited version of the author's address to the first IAAF Congress on Women in Mainz, Federal Republic of Germany, published in the Official Report by IAAF and the German Athletic Federation. Re-printed with permission from Modern Athlete and Coach.

The importance of strength training in the javelin throw and its position and structure in the process of a continuous development of event-specific skills and capacities differ fundamentally from the methods in the other throwing events although the basic principles of the training structure are equally valid for all of them.

One of the dominant and decisive abilities in the throwing events is the capacity of elasticity, which is known to make a major contribution to the athletic performance and influences the development of athletic form. In respect of the training of athletes in throwing, and this includes javelin throwers, the capacity of maximum strength, as another basic element, is also fundamental in determining performance.

Since the distance that a javelin can be thrown is determined essentially by the speed of the throw (initial velocity), the aim of strength training in this event can be defined as transmitting the highest possible speed to the implement.

STRUCTURE

In consideration of this aim we have divided the structure of strength training into four areas:

- General strength training.
- Maximum strength training.
- Special strength training.
- Specific strength training in throwing.

General strength training serves to develop and consolidate the fundamental and essential prerequisites of maximum and special strength training. It should contribute primarily to an increased physical load-bearing capacity and, in addition, to the development of general elasticity and event-specific strength.

The training is characterized by the use of general strength exercises on the apparatus with disc-barbells and selected forms of exercises, which in terms of the level of loading lie below 60% of the actual maximum test performances in each particular exercise. The training exercises for maximum strength training serve directly to develop maximum strength. From our point of view, and of particular importance in the training of women javelin throwers, is a well-planned event-specific selection of exercises. It depends upon the state of development and must be flexible and essentially individual.

From the large number of available exercises for the development of maximum strength, I found most useful for myself snatches, half squats, jerks behind the neck and bench presses. Even from today's point of view, I consider these exercises to be particularly suitable for the development of event-specific strength in women javelin throwers at the higher levels of performance. Exercises that can also be of importance in particular phases of training, within a program covering several years, include jerks, full squats, cleans and presses behind the neck.

In the selection of the physical exercises used in the maximum strength training of women javelin throwers, I see a fundamental difference from the structure of training in the other throwing disciplines. In the course of planning of training, attention should be paid to the development of a high general maximum level of strength as the foundation for an event-specific maximum strength capacity by a purposeful selection of exercises.

Special strength training, on the one hand, contains carefully selected exercise for those muscle groups involved in the movement of throwing, as well as special exercises which essentially coincide with the competition action in their partial structure and in the time progression (for example, single and two-armed throwing movements with weights, or imitative elements of the individual phases of throwing against resistance). These exercises develop special elasticity and specific endurance capacities.

In the javelin throw the capacity to develop explosive strength, in addition to event-specific elasticity, is of equal importance to achieve a high speed delivery. Even though its development by the means of special strength training is limited, we have attempted to achieve it by specific training in throwing. This specific training includes exercises for the development of the highly specialized capacities of strength. The execution of the training exercises must show the fundamental characteristics of the motor structure of the competition movement.

Training is carried out with throwing equipment of different weights, such as throws with shots, medicine balls, volleyballs, baseballs and hockey balls.

VARIED RESISTANCES

In setting our training targets, we start out from the principle of achieving the development and consolidation of the special strength in throwing by using equipment that is heavier than competition equipment. We train for elasticity and explosiveness of the throw with special equipment that is lighter than that used in competition.

From my own experience, I would like to emphasize strongly that the choice of weights for the special throwing equipment must be given careful consideration and must not be measured by the strength capacities of the male javelin throwers. If the weight of the special throwing equipment is too high or too low, there is an increased risk of a faulty execution of the movement and of an incorrect timing in performing the exercise. There is also an increased danger of injury, so the level of the individual's own strength capacity should determine the selection. For my training we selected weights in the range of 125g to a maximum of 4kg, while in the competition period, equipment weighing 800g was given preference.

As far as the ratio of general to special strength training is concerned, we think that both complexes are to be given consideration throughout the entire preparation period of the year's training and competition. Proportion, extent, intensity and the specific nature of the exercises should depend upon individual targets for strength development. In the first phase of training in the preparation period the ratio used as a guideline is 70% to 30%. Whereas later on, general strength training diminishes in importance and is neglected almost completely during the competition period.

Special strength training, in contrast, should be used all year round, although the volume, intensity and the specific nature of the exercises must be adapted to the changes brought about during the training. These have to be determined by the state of development of the strength of an individual. The same is true for the structure of specific strength training in throwing.

Whereas, at the start of the preparatory period, a large number of complexes of special exercises can be included, as the time of competition approaches, there should be a selection of particular forms of exercise appropriate to the individual. This is done by observing a harmonious balance of the volume and intensity, in order to achieve the kind of loading best suited to develop and perfect the event-specific elasticity.

In the medium and long term planning of strength training, the cyclical structure of training (its division into individual periods of time, each with its own clear

tasks and targets) is the best means of preparing, developing and stabilizing the event-specific characteristic of strength. This enables the athlete to transfer the acquired capacities at a specific time into a high level competition performance. The structure of loading in training should therefore follow didactic principles and develop from the general to the specific, from the easy to the difficult, from the uncomplicated to the complicated.

From these guidelines in the strength training of the javelin it is clear that, as the competition period approaches, the volume is reduced in favor of intensity. The reduction relates both to the frequency of strength training, as well as the volume used in individual exercises. Over the year it can be expressed as the principle of high volume — low intensity and vice versa.

In spite of the dominant influence of strength in the performance of the javelin throw, strength training is only one complex within the totality of the event. In all phases of development and training the specific nature of the physical exercises and the choice of methods and the structure of strength training must be subordinated to the targets and tasks of the particular phases within the total process of training.

INJURIES

In connection with these statements, I would like to make a few remarks on the problem of injuries in strength training. In the course of my long years of training, I have found that strength training, in all its forms, no longer involves a high risk of injury. But the risk can be considerable if training is carried out unsystematically, or is exclusively one-sided. Here, javelin throwing is no different from any other discipline.

In the present state of knowledge, it is possible to achieve a correct balance in the structure of training. If, in the choice of methods a systematic and continuous program of strength development over a number of years is built up, with consideration given to the characteristics affecting the development of young athletes, injuries and physical damage are avoidable. The principal cause of injury lies in not paying attention to these characteristics. Because strength is a dominant factor in the performance, there is also the danger that it will be made the dominant activity in training.

In the development of strength, particularly maximum strength, in the training of young athletes at the start of their athletic careers, it is essential to avoid training based on principles which cause disproportion in the development of other capacities. It is much faster and easier to develop muscular strength than tolerance to loading and the stability of the ligaments and support apparatus. If due attention is paid to this fact in the structure of strength training, a major cause of injury can be reduced.

Another cause of injury in strength training is the neglect in acquiring a good technique in performing the exercises. A good quality of performance, not only brings higher achievement in the exercise itself, but also reduces the possibility of injuries, which can take place as a result of faulty loadings.

Because the maximum strength exercise, the snatch, is an important one in strength training for javelin throwing, it should be mentioned here as a potential source of faulty loading. If the exercise is carried out with a good technique, the strength exerted by the athlete does not exceed the actual weight of the barbell by more than 135 to 140%. But if the technique is poor, this can rise to above 180% of weight of the barbell. Here, the region of the spine and the muscles of the back are particularly at risk in the phase of the acceleration of the weight. In the phase of active lowering of the body, affecting particularly the shoulder and arm muscles, and in the phase of checking the descent of the barbell, the risk of faulty loadings for the shoulder girdle, the elbow joints and the wrists increases considerably.

IN CONCLUSION

In my own activity I gave particular attention to the development of strength over a period of 15 years. I am often asked whether strength training did not affect my health and whether it was not psychologically damaging to be represented publicly as muscular.

For anybody who is worried about the health of a woman athlete, I would like to confirm from my own experience that I find no reason why a systematic and continuous development of strength for efficiency in an event should be less possible for a woman than for a man. As far as trained muscles and well developed strength capacities are concerned, I can assure everybody that both disappear more quickly than the time required for their development.