

JAVELIN TRAINING IN FINLAND

By Esa Utriainen

A comparison of the development and training of male and female javelin throwers in Finland, looking at physical differences, strength development, natural aptitude to throwing and periodization. The article is based on edited and condensed notes of the author's address for the XIV Conference of the European Athletic Coaches Federation at Aix-Les-Bains, France, in 1987. Re-printed with permission from Modern Athlete and Coach.

There is a large number of structural differences between men and women and, in order to reach good results, these differences have to be taken into consideration. Approximately 40% of men's body weight consists of muscles, compared to some 27% in women. Women are clearly shorter than men and proportionately women's legs are shorter. In general, women are about 10cm shorter, 10kg lighter and have some 25% shorter legs than men. Women's hips are lower, broader and also weaker. Their bodies contain more fat and their strength level, proportionately measured, is 50 to 80% of the men's strength. Because of their weaker support tissue, women run greater risk of injury. On the other hand, a woman is tougher and she stands more pain than a man.

The major differences, as far as the javelin throw is concerned, can be summed up as follows:

Weaknesses (compared to men):

- A relatively smaller proportion of muscle mass to the body weight and a larger percentage of fat.
- A significantly poorer production of testosterone, some 10 to 11 times smaller than men's.
- General weaknesses in the middle and upper trunk.
- Natural slowness because of smaller and weaker muscles.
- Generally poorer technical skills and implement control.

Strong Points:

- A greater capacity to train because of larger energy sources.
- A better mental balance.
- Earlier maturity for intensive training.

Because of the above mentioned differences, including also the menstruation cycles, a masculine training program can not be applied to women. The differences are so significant that special attention should be paid to female javelin throwers, particularly as far as strength, technique and speed capacities are concerned.

STRENGTH

In Finland, track and field talent is generally identified in the 14 to 15 years age range and then selected to undergo training programs at various levels. With practically no exceptions the girls selected for the javelin throw have a poor strength level. Strength is by far a minor problem as far as boys are concerned.

Generally, the first task of a javelin coach is to influence the athlete's attitude towards strength training. This applies in particular to girls, as it is much easier to make the boys understand the need for strength and make them begin with weight training and gym work.

The strength training for girls during their first few years could actually be called muscle conditioning training. It must provide a careful and versatile start to strength development. Girls must be taught first to perform muscle conditioning exercises using only their own body weight for resistance.

To this is added medicine ball exercises and throwing of various weight shots. Gradually, as the strength level begins to improve, the girls are introduced to light weights and begin to learn the lifting techniques of various exercises. The most common exercises include the snatch, clean and jerk, clean, squat, half-squat and the hyper-pull. A beginner needs normally one or two years to establish satisfactory control to perform the above listed exercises.

Artistic gymnastics, in addition to weight training, is one of the best strength development methods. It is particularly suitable for beginners but should be continued by experienced throwers throughout their career.

Boys, in general, are better prepared to take up strength training thanks to their better condition. Furthermore, their attitude towards strength development is as a rule positive. Some might even see strength development as an end in itself, which certainly does not benefit the actual throwing performance.

Because of the changes in the social structure from agricultural to urban industrialized society, the average strength level of javelin throwers has decreased significantly over the past 10 to 15 years. A survey of male javelin

throwers, for example, indicated that seven out of the best 10 Finish throwers were able to clean 150kg in 1976. In 1986 only two out of the best 10 reached 150kg. No similar comparison is available for women athletes.

Compared to boys, girls at the same stage of training should perform more strength development exercises, if not in the volume, at least in the number of repetitions. The legs should not be forgotten but emphasis must be placed on the development of the upper body.

THROWING APTITUDE

Boys in Finland have a natural aptitude for throwing as there is space for throwing virtually everywhere. In summer boys throw pebbles at the lakes or cones in the woods. In winter it is time to throw snowballs. Due to the throwing experience from the childhood, boys find it easier to control the javelin and learn the technique faster and better than girls.

Both boys and girls play pesapallo, a Finnish national game, similar to baseball. The players throw during this game numerous times a ball weighing 150 to 180g. As pesapallo is a very popular game in schools, it provides the girls their main experience of throwing.

However, the throwing technique of the pesapallo ball can be considered to have a negative influence on the javelin technique. The ball is light and often thrown below the shoulder level in a slinging action. This leaves the girls with little childhood throwing experience and they need a large number of throws to learn the javelin technique and the control of the implement.

The actual technique is not as important in the beginning as the number of throws performed in order to develop throwing endurance and experience. The girls have only one way to improve their implement control — an increased quantity of throws. How important is the implement control can be seen in the comparison of the results achieved in throwing a 600g ball and the javelin of the same weight.

If the javelin result is better than the distance achieved with a weighted ball, the thrower has a good control of the implement that has different flight qualities. On the other hand, if the results with the weighted ball exceed the results of the javelin throw, there are certain technique and implement control problems, because the ball is easier to throw.

As boys, with only a few exceptions, achieve better results with the javelin, it is obvious that girls, who have had limited throwing experience, must in the beginning concentrate on throwing. At this stage quantity is more important than quality.

Presently in Finland 10,000 (\pm 2000-3000) throws are considered to be an average for a training year. Of this total 30 to 50% of the throws are performed with a javelin. The difference, 70 to 50%, is usually executed with a variety of weight throws. Women normally use mainly underweight implements of only 400

to 600g. Overweight (700 to 900g) throws are less frequent and make up about 10 to 15% of the total.

Men use in training a regular javelin and 800 to 1000g weights more frequently than women. For the development of event specific speed they employ underweight balls (400 to 700g) and for the development of event specific strength overweight implements of 1 to 1 ½ kg, sometimes even up to 2.0kg.

Table 1 gives an annual distribution of throws with a normal javelin, underweight and overweight implements for women and men at the age of 16 years and again at the age of 22 years. It is only an example and it should be stressed that variations occur depending on individual differences, as well as anatomical differences between men and women.

TABLE 1: Distribution of throws in a year.

<i>Implement</i>	<i>Women</i>		<i>Men</i>	
	<i>16yrs.</i>	<i>22yrs.</i>	<i>16yrs.</i>	<i>22yrs.</i>
<i>Javelin</i>	3000	5000	2000	5000
<i>Underweight</i>	3000	4000	1000	2000
<i>Overweight</i>	800	1500	3000	4000
<i>Total</i>	6800	10500	6000	11000

Finally a few words about throwing exercises in training. We avoid standing throws after the first year of training, when standing throws are used only as a warm-up for the work to follow. The main emphasis in the throwing exercises during the winter, when training takes place indoors, is placed on throws from a cross-stride approach and a 6 to 8-stride bounding run-up (five-stride rhythm).

Some throws from a full run-up are included in practically every training session. The number of these throws is increased as the competition season approaches.

PERIODIZATION

For many years javelin throwers in Finland used a single periodized year, divided into two basic training cycles, a pre-season cycle, competitions and a transition cycle. This has now been changed to double periodization, where the first period finishes at the end of March with the national indoor championships and the second is terminated at the end of the normal summer season.

The double periodized year is based on the following distribution of training:

- Basic Training I: 8 weeks with emphasis on general endurance, general strength and specific strength development.

- Basic Training II: 8 weeks with emphasis on maximal strength development and a large volume of throwing.
- Pre-season I: 5 weeks with emphasis on speed (sprints), general and specific strength and technique development.
- Competitions I: 3 weeks with emphasis on explosive strength and event specific speed development.
- Basic Training III: 4 weeks with emphasis on the same qualities as in Basic Training I.
- Basic Training IV: 4 weeks with emphasis on the same qualities as in Basic Training II.
- Pre-Season II: 6 weeks with emphasis on the same qualities as in Pre-season I.
- Main Competition season: July, August, September.
- Transition: 3 to 4 weeks.