

A JAVELIN STUDY

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The authors analyze a study of the training methods used by Soviet women javelin throwers and come to the conclusion that an increased volume of full effort throws from longer run-ups should be responsible for improved competition performances. The article is translated from Theorya i Praktika Fiziceskoi Kultury, Moscow, No. 11, November 1986.

Improvements in performance in contemporary javelin throwing are on one hand tied to an increased volume and intensity of the training load, on the other hand to a better structure of training processes. Further rises in the performance level and possible successes in major competitions are largely dependant on the system of preparation employed by the athlete.

Studies and analyses of the training of women javelin throwers make it possible to discover how certain processes have been employed in the different stages of training. In order to establish the distribution of the major training methods in the practical preparation, we analyzed 23 yearly training cycles of women javelin exponents. The dynamics of the training load in the analyses was based on normal measuring units (km, tonnes etc.), as well as on percentages from the total yearly volume (100%).

The training methods employed by the athletes were divided into five major groups, taking into consideration in the analyses of the throwing and running exercises the structure of competition performance (the javelin throw from a run-up). The following groups were established:

Group 1

Exercises with the javelin and similar throwing implements

1. From a standing position, or from a 2 to 3 stride run-up.
2. From a run-up exceeding 5 strides.

Group 2

Exercises with assisting throwing implements.

1. From a standing position, or from a 2 to 3 stride run-up.
2. From a run-up exceeding 5 strides.

Group 3

Jumping exercises (single and multi-jumps)

1. Depth jumps.
2. Standing jumps, as well as jumps from a 3 stride run-up.

Group 4

Running exercises.

1. Specific javelin running exercises (with the javelin, over the full run-up distance etc.).
2. Accelerations to maximal speed (over distances up to 100m, accelerations, specific running drills).
3. Runs to improve speed endurance (distances exceeding 150m, cross-country runs).

Group 5

Strength development exercises.

1. Using the barbell.
2. Using smaller weights.

RESULTS OF THE STUDY

An analyses of the information (see table) indicates that the yearly training of women javelin throwers places emphasis on the development of power and the improvement of the technical elements of the throw. It can be seen that the share of the throws with the javelin and with assisting implements from a standing position or from a 2 to 3-stride run-up (groups 1 and 2) makes up 54.1 % and 25.6% respectively from the total yearly volume of throws. The volume of throws from a longer run-up appears to be restricted because of the stress on the support and movement apparatus.

The development of endurance (69.7%) takes priority in the running training, while specific javelin running exercises reach only 7.4% of the total volume of this group (group 4) of exercises. The proportion indicates that the athletes employ only a minimal number of exercises that assist in the development of the stride rhythm of the run-up.

TABLE: DISTRIBUTION OF MAIN TRAINING METHODS IN A YEAR'S CYCLE

TRAINING METHODS	Total 100%	% of the year's total volume in each month											
		X	XI	XII	I	II	III	IV	V	VI	VII	VIII	IX
Total throwing load	11363												
Standing javelin throws	2860												
	100	5.2	8.2	6.8	12.0	5.2	9.8	18.5	9.4	6.6	6.6	5.4	6.3
Javelin throws from a run-up*	1728												
	100	5.0	-	-	19.0	4.0	5.0	5.3	13.4	14.5	13.7	12.1	8.0
Standing throws with assisting implements*	6202												
	100	1.9	18.2	23.2	14.3	8.0	13.5	7.4	3.0	2.6	3.3	1.5	3.1
Assisting implements throws from a run-up**	573												
	100	-	18.0	20.2	24.7	8.8	21.2	7.1	2.0	-	-	-	-
Jumping load - number of take-offs	4694												
	100	4.2	8.3	14.1	13.6	9.4	6.2	6.0	12.3	7.5	7.3	5.1	6.0
Running load (km)	211												
Specific runs for javelin throwers	15.6												
	100	11.0	9.9	12.9	11.5	8.7	11.7	9.8	4.5	4.5	4.6	6.7	4.2
Maximal speed runs	48.3												
	100	4.3	11.7	13.6	13.2	7.3	10.1	6.9	5.3	9.0	7.2	7.1	4.3
Speed endurance runs	147												
	100	14.3	11.9	7.4	8.7	7.7	8.4	9.7	7.0	8.	5	5.8	6.2
Strength loads (tonnes)	609												
Barbell exercises	381												
	100	8.4	8.0	9.6	14.0	7.3	16.8	9.6	8.5	5.3	5.0	5.7	1.8
Exercises with other weights	216												
	100	7.2	13.2	11.7	12.1	9.1	12.4	11.1	4.6	5.6	4.9	4.0	4.1
Imitation exercises (reps)	100												
	100	10.6	9.3	11.5	14.4	9.0	9.8	5.8	7.2	4.2	6.3	6.9	4.0

*including 2 to 3 strides run-ups.

**run-ups over 5 strides

Exercises with the barbell (bench press, clean, snatch and squats with maximal weights) make in 65% of the total volume up the largest contribution to strength development. Exercises making use of smaller weights are restricted to only 35% of the total volume. This distribution points to the leading role of specific strength training in the high performance phase of javelin exponents. It can be assumed that such a distribution is most efficient to develop specific strength.

On the other hand, it should be taken into consideration that the predominance of strength development can have a negative influence on the development of other physical capacities. Consequently, the distribution of strength exercises should be adjusted to bring the development of the prime mover muscle groups to the foreground, without neglecting the leading physical capacities that correspond with the structure of the competition throw.

The analyses shows further that the volume of training in a year's cycle is based on characteristic changes in monthly intensities and loads. In double periodization the first phase in the preparation period lasts four months (October to January), the second phase two months (March/April). As the first important

competitions take place in February (USSR Winter Championships), this phase is also the first competition stage.

The distribution of training methods in this structure is in the year's cycle characterized by a large volume of throws with assisting implements, then jumping and strength training prior to technical work (throws with the javelin and specific running training). The largest training load in the first preparation phase falls on running training in October. Throws with assisting implements, as well as jumping exercises and strength training have the largest share in December.

The contribution of running, jumping and strength exercises drops somewhat when technique development increases and the number of throws performed from a 5-stride or longer run-up is virtually doubled. The development of technique therefore follows a large volume of work with assisting implements (work on single elements of the throwing technique), as well as jumping and strength exercises.

The training in the second phase of the preparation period follows the principles employed in the first phase. Only the volume of barbell exercises (up to 16.8% of the year's total) and javelin throws from a standing position (18.5%) are increased.

CONCLUSIONS

The results of our study allowed making the following conclusions about the structure of the training of women javelin throwers:

- The athletes at the high performance level employ double periodization in a year's training cycle.
- High level performance is achieved by a large volume of training, employing several training methods.
- The athletes use in parallel heavy load volumes of specific power and technique development methods.
- An analysis of the planning of training showed that throws with the javelin (including similar implements) and assisting implements from a run-up of more than 5 strides, had a relatively small share of the total volume in a training year: 15% and 5% respectively. Here is, in our opinion, a hidden and unused reserve for a more effective training approach. A reduction of throws from the standing position and from a 2 to 3 stride run-up and an increase in the volume of full effort throws from a longer run-up appears to be the answer.

We believe that a successively increased volume of various training methods, combined with an increase of loads close to the actual competitive movement

structure, would improve the efficiency of the training processes of women javelin throwers and with it the performance.

References: include Russian language publications by:

- Bondarchuk, A.P.
- Verhoshanski, J.V.
- Pimtrussenko, O.Z.
- Matvejev, L.P.