

## **THE TRAINING OF TOP LEVEL HAMMER THROWERS.**

by Bob Wagner, 1986.

*I wrote this after training in Italy in 1985, and having Jimmy Pedemonte visit us here in Australia through the AIS, This all came about through the encouragement of Merv Kemp and Peter Farmer. I have edited it slightly as the Soviet Union no longer exists. However the way we throw is still referred to as the Soviet technique.*

When we talk of hammer throwing and hammer training, the Soviets are talked about more than any other nationality. The reasons are obvious when we look at the World Rankings. For example, in 1986, the Soviets had 54 of the top 100 throwers, including the number 1,2,3,4,8,9,10 performers. The rankings went from 86.74 m World Record by Yuri Sedykh to number 100 at 72.36 m. They also stated-that they had 3000 specialist hammer throwers.

With these numbers to work with, over many years, a great deal of research has been carried out. Hence the development of the "basic technical model" and "conditioning system", for the hammer throw.

Is this information from the Soviets useful to us?

After all Australia has different geographic, social, economic and cultural positions to that of the Soviet Union.

Firstly, the basic technical model, for the throw itself has been accepted world wide. Secondly, the Soviets recognise that there is a difference between throwers and programmes must be adapted to suit the individual's needs. Thirdly, as a whole the Soviets don't have sophisticated equipment. This equipment is only available to a select few.

## **IMPROVING PERFORMANCE**

All aspects of the throwers training are interdependent, and influence each other. For the thrower to develop further the athlete needs to improve all of these aspects, technique, strength, physical capacity, etc. to improve. So far, no single exercise has been found that will directly and solely improve performance with the hammer. We look at combinations of **general** training, **specific** and **special** training to improve performance.

## **GENERAL AND SPECIAL TRAINING**

Simply, general training aims at making the thrower a better athlete, and special training aims at making the thrower a better thrower.

Example: A 30 metre sprint for the hammer thrower is a general exercise, while for a sprinter is a special exercise. Overhead shot throw for the hammer thrower is a special exercise, while for the sprinter is a general exercise.

General training is chiefly concerned with the improvement of general strength and general speed. Special training develops special strength and special speed specifically for the event. So for the hammer thrower sprints and Olympic lifting exercises are general training and throwing of light hammers, used to develop special speed, is special training.

### **IMPROVING SPECIAL SPEED**

This is carried out by:

1. Use of light hammers
2. Use of heavy hammers - increases speed-strength, the thrower is slowed down so that coordination and technique can be improved.
3. Frequent changes in the weight of the hammer
4. Shortening the length of the hammer
5. General exercises with the barbell, performed quickly
6. Specific Strength exercises

The higher the level of the thrower, the less general training and more special training takes place.

### **GENERAL TRAINING**

General training is made up mainly of general weight lifting exercises, with a small amount of sprints and jumps.

General weight training exercises include the Front and Back Squat (to parallel), all variations of Power Cleans and Power Snatches (not Olympic snatch or clean) and a small amount of heavy pulls or dead-lifts. No pressing movements are performed for the upper body.

The most common method of improving general strength is by  
The use of the PYRAMID system, or one of its variants.

The pyramid can be used in three different ways:

1. wide base-narrow apex (eg. 5X60kg, 4X70, 3X80, 2X85, 1X90).
2. Double pyramid (eg. 3X60kg, 2X70, 1X80, 2X70, 3X60).
3. Reverse pyramid (eg. 1X100kg, 2X90, 3X80, 4X70).

Sprints used are short, 20-30 metres, with or without a crouch start.

Jumps used are normally the standing long and triple jump, stair hops or bounds, and bounding over hurdles. These are only used on throwers who have already attained a high level of general training and conditioning. Not advised for throwers that are carrying out heavy squat training, or have knee problems.

### **SPECIFIC STRENGTH EXERCISES**

Specific strength exercises are used to develop the muscle groups that are used in throwing, but are not worked or conditioned enough during general training.

The most important of these muscle groups to be worked are the oblique muscles of the trunk. This is carried out using delivery imitations with a weight. There are a variety of these exercises. Example: Russian twists, figure 8, twisting situps, side bends, etc.

## **TRAINING SESSIONS OF THE HAMMER THROWER**

Each training session with the hammer should be made up of weak, moderate and maximum throws. Weak 50-80%, moderate 80-90% and maximal 90% plus, the total number of throws are normally from 25-30, ( although as many as 300 throws are performed by some throwers, at certain times of the season). As the standard of the maximum throws increases, so should that of the weak and moderate throws.

The intensity of the throwing session is determined by the combination of weak, medium and maximal throws and the time of the year. A training session is carried out with firstly weak, then maximum and lastly medium intensity throws. See table of intensity below:

Table of Intensity		
Maximum	Medium	Weak
40	32-36	20-32
50	40-45	25-40
60	48-54	30-48
70	56-63	35-56
80	64-72	40-64

## **THE USE OF HAMMERS OF VARIOUS WEIGHT**

Training usually has some 7.26kg hammer throws present. Each session generally has heavy, standard and light hammers present, but the proportions vary due to the time of the season.

Different weights are used on various days of training. Throwing at first heavy, then standard and then light hammers. The advantages of this is still not fully understood but the effectiveness of using such a system is evident from the results of many throwers.

The weight of heavier and lighter hammers needs to be chosen for the individual. Small variations suit some throwers ( Tamm and Litvinov), whereas others may have a large variation (Sahner). The optimal weights will also change from year to year as the thrower becomes technically better and physically better conditioned. If one combination of weights does not improve performance with the standard hammer, then another combination must be used.

## **WEIGHT TRAINING WITH THE BAR**

Intensity is important here, just as it is in throwing. Weights need to be medium to near maximal (90-100%) to have any effect per session.

Training in volume 1.5-3T creates improvement in the neuromuscular apparatus of the body and, as a result, the performance in training will improve. A larger influence

will occur when the training load is 5-7T, with maximum and moderate weights, with the best performance coming after one day of rest. 7-10T may cause tiring and throwing performance may actually fall, requiring two days of rest.

In high level throwers the monthly cycle can exceed 100T, with weights in the 80-90% of maximum range.

**THE FOLLOWING IS THE TRAINING PROGRAMME OF YURI SEDYKH AS PRESENTED BY JIMMY PEDEMONTE IN CANBERRA IN 1986.**

To understand much of this programme we need to know what **FUNCTIONAL CYCLING** is.

The modern hammer thrower's training program is made up of three periods, that of Active Rest, Preparation and Competition. During these periods the athlete goes through a series of cycles. Each cycle is made up of General training, Special training, Technical training and Active rest. The cycles take on the name of the prevalent type of training carried out in that particular cycle, each cycle builds on the previous one. This method of programming is referred to as **FUNCTIONAL CYCLING**, and has been described in detail by A. Bondarchuk (USSR) 1986.

In Sedykh's case the annual programme took the following form:

Active Rest	General 70%				Technical 40%			Special 30%		
	Technical 30%				Special 45%			Technical 70%		
					General 15%					
X	XI	XII	I	II	III	IV	V	VII	VIII	IX
						VI				

Some details of the cycles are given below

MONTHS	STRENGTH	THROWS	JUMPS
XI-II	<b>800 Tonnes</b>	<b>7000</b>	<b>800</b>
	legs 350 T	7.26 X 1000	
	body 270 T	10kg X 2000	
	back 180 T	16kg X 4000	
III - VI	<b>600 Tonnes</b>	<b>6000</b>	<b>650</b>
	legs 200 T	7.26 X 2200	
	body 250 T	8kg X 1500	
	back 150 T	9kg X 1000	
		6kg X 1300	
VII-IX	<b>350 Tonnes</b>	<b>4500</b>	<b>400</b>
	legs 100 T	6kg X 2500	
	body 150 T	7.26 X 1500	
	back 100 T	10kg X 500	

**NOTE:**

1. Exercises for the legs included leg press, squat jumps, hip/leg sled, squats. For the trunk., twisting and related drills while the back was worked with Olympic lifts.
2. The 16kg hammer- is thrown in combination with -the 7.26 and 10kg hammers and usually on the same day.
3. The 16kg implement (2 Soviet PUD) is a kettlebell and is used to simulate the delivery action. It is used to develop special strength, that is, it involves a specialised technical movement while at the same time developing the athlete's strength. The implement is normally thrown with 1 turn.
4. The 10kg hammer is usually between 100-105cm in length, although the full length hammer is also thrown.
5. The essence of Bondarchuk's functional cycling is that it is a succession of combinations of means and methods. The proportions of the component parts change from cycle to cycle but, generally speaking, they always throw and lift weights. Results come from the change in combinations, not from the changes in volume and intensity as was the case in the Matveyev periodisation model. All work is performed at a high intensity.

An example of changing the combination is as follows:

7.26kg hammer 70% of total throws		Heavy hammer 60%		Light hammer 20%
Heavy hammer 30%		7.26 kg hammer 40%		Heavy hammer 10%
Squats		Step-ups		7.26 kg hammer 70%
				Cleans

Sedykh did not throw any 8kg or 9kg hammers in the first cycle (XI-II) but did so in the second cycle while dropping the 10kg hammer. The Soviets use a particular combination of hammers and when this combination fails to produce results they change to another combination. In this way, variety means improvement.

6. Basic work involves activities such as weights, jumping, sprints, various games, stretching and so forth.

7. In the second cycle the volume of lifting decreases despite covering the same time period as the first.. This is explained by the nature of the cycle. Lifting is less important in this cycle but the intensity is, as always, very high.

8. In the last 2-3 weeks leading up to a major competition Soviet hammer throwers reportedly do no classic Olympic lifting work and concentrate on complementary with some emphasis on twisting and rotation drills.

9. During the period VII-IX, the 10kg hammer was thrown for special strength.



## LEVELS OF PERFORMANCE

The following tables may help as a guide to the levels of conditioning achieved by some throwers.

In 1977, Sergey VOZNIAK made the following predictions concerning the performance of hammer throwers for the Moscow Olympic Finals.

Standing long jump	3. 40 m
Standing triple jump	9. 53-9. 90 m
Power clean	190-190 kg
Squat	260-290 kg
351b weight throw (16kg)	24-25 m

More useful information for our purpose can be seen in the two tables below, the first by Jimmy Pedemonte in 1986.

7.26kg hammer	50-55 m	60-65 m	70-75 m
5.0 kg hammer	60-62	70-72	82-85
6.0 kg hammer	55-58	66-70	76-80
8.0 kg hammer	42-46	50-57	61-68
30m sprint	4.2-4.0s	4.0-3.9s	3.9-3.8s
Squat	150-165 kg	165-185 kg	180-200kg
Power clean	100-110kg	120-130kg	145-155kg
351b weight	12-13 m	15-17 m	18-20 m

Secondly compare this to the best Soviet teenagers, and the number 1 and 3 all-time throwers, Bondarchuk 1986.

Results	14yrs	18yrs	Tamm	Sedykh
7.26kg hammer	52.10 m	78.04m	84. 40	86.74
5. 0 kg hammer	70. 80	92	98	
6. 0 kg hammer	64.36	86	91	96
8. 0 kg hammer		72. 00	78.56	78. 50
9. 0 kg hammer			70. 84	71. 00
10.0 kg hammer			67.40	64.00
Snatch	75kg	125kg	130narrow	115
Power clean	100	175		160
Squat	150	270	250 x 3	240
Standing long jump	3.01 m	3.15 m	3.03	3.05
30 m sprint (crouch)	4.3 s	4.0 s		
overhead shot(7.26kg)	12 m	17.50 m		18.50

Forward shot            14            19.80

## **MY TRAINING**

With this in mind, I will outline some of the variation, and methods carried out in my own training prior to throwing 70m.

## **WEIGHT TRAINING**

Weight training sessions are carried out as follows: light stretching, specific strength exercises, Snatch or Clean exercises, Pulls and lastly Squats.

Specific strength exercises are carried out before the other exercises for two reasons

1. Act as a general warm up for the rest of the session.
2. If left to last they never get completed, due to the fatigue Caused by Squats. These exercises include two from Situps, Russian twist, Plate Twist, Delivery exercise and Figure of eights.

Usually 1-2 sets of 2-5 reps of approximately 50% of the maximum weight to be used in the exercise is used as a more specific warmup.

The Snatch and Clean exercises vary as follows:

Day	1	Power Clean and Narrow Snatch from the hang
Day	2	Power Snatch and Wide Snatch from the hang
Day	3	Narrow Power Snatch and Narrow Snatch from the hang

The system of pyramiding that is used is the REVERSE PYRAMID.

The reasons are as follows 1. when throwing, the heavy hammers are thrown before the standard and light hammers. The reason behind this is, as the athlete begins to fatigue in

training a lighter hammer is used to maintain technique levels and speed. 2. In other pyramids as the weight gets heavier the athlete is also getting more fatigued, consequently slower in the actions he makes. By working in reverse the athlete is freshest for the heavy weights, and as the weight reduces, the athlete must aim to work the movement more explosively. 3. Conditioning of the athlete is still carried out, but after the heavy work, reducing the chance of injury.

## **THROWING**

Throwing sessions are basically the same as, outlined. Working with hammers from heavy to light, with some 7.26kg hammer usually included.

The heaviest hammer used is 14.5kg and full length, after using this hammer "all" others feel light. The lightest hammer is 6kg

Warm up for throwing is a slow run followed by stretching and then Multiple turns, if an area is available. During competitions only the two warm up throws are taken before hand.